DOCUMENT RESUME

ED 358 859 IR 054 584

AUTHOR	Mulford, Carolyn
TITLE	The Future of Government Information: Money, Management, and Technology. Summaries of Proceedings of the FLICC Forum on Federal Information Policies (9th, Washington, D.C., March 17, 1992).
INSTITUTION	Federal Library and Information Center Committee, Washington, DC.
REPORT NO	ISSN-1061-7485
PUB DATE	Dec 92
NOTE	57p.
AVAILABLE FROM	Federal Library and Information Center Committee, Library of Congress, Washington, DC 20540-5100 (free).
PUB TYPE	Collected Works - Conference Proceedings (021) -- Reports - Evaluative/Feasibility (142)
EDRS PRICE	MF01/PC03 Plus Postage.
DESCRIPTORS	Abstracts; *Access to Information; Case Studies; Census Figures; Computer Networks; Cost Effectiveness; Economic Factors; Federal Government; Futures (of Society); *Government Role; Information Dissemination; *Information Management; Information Technology; Library Role; Policy Formation; *Public Policy; State Government; *Technological Advancement
IDENTIFIERS	European Community; *Government Information; *Information Policy; Patent Office

ABSTRACT

This report contains summaries of papers presented at the annual forum of the Federal Library and Information Center Committee (FLICC) of the Library of Congress. Introductory and special remarks were delivered by FLICC Executive Director Mary Berghaus Levering, Associate Librarian for Constituent Services of the Library of Congress Donald C. Curran, and Librarian of Congress James H. Billington. These are followed by two keynote addresses: "Congressional Policy Initiatives Regarding Availability of Federal Government Information and the Role of the Joint Committee on Printing" by Charlie Rose, and "A Vision of the Future," by Mitchell Kapor. The following papers were also presented: (1) "Public Access in Government and Its Cost" (Gary D. Bass); (2) "Dissemination of Electronic Government Information: New Role for Old Players" (Robert E. Kahn); (3) "The Changing Information Marketplace: Government and Industry Roles, Government Perspectives" (Joseph E. Clark); (4) "Industry Perspectives: Keeping Access to Government-Produced Information Open--The Fallacy of Information as a Government Profit Center" (Gerald E. Yung); (5) "Census Data Case Study" (John C. Kavaliunas); (6) "The Patent and Trademark Office Example: Managing Massive Amounts of Data and Delivering It to the Public" (Thomas P. Giammo); (7) "State Government Innovations in Managing Electronic Information" (Ed Levine); (8) "The European Community Information Policy Program" (Colin Hensley); (9) "Emerging Roles for Libraries and Information Centers" (Thomas J. Galvin); (10) "New Linkages for Library Resources" (W. David Penniman); and (11) "Developing Government Information Inventory Locator Systems" (Charles R. McClure). Panel discussion topics and moderators included the following: "Current Policy Issues Relating to Government Information" (George B. Trubow); "Case Studies--Problems, Priorities, and Challenges" (Toni Carbo Bearman); "Changing Information Infostructure" (William W. Ellis); and "Approaches and Opportunities--Discussion and Wrap-Up" (Thomas J. Galvin). (SLD)

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☐ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

FLICC
Federal Library and Information Center Committee
Library of Congress
Washington, DC 20540
(202) 707-4800

ED358859

Proceedings of the FLICC Forum on Federal Information Policies

1992 Forum (9th)

The Future of Government Information: Money, Management, and Technology

March 17, 1992

PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
Mary Berghaus Levering
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC).

About FLICC

The Federal Library and Information Center Committee (FLICC) was created in 1965 as the Federal Library Committee by the Library of Congress and the Bureau of the Budget (now the Office of Management and Budget), renamed FLICC in 1984 to reflect its growing information center constituency, and granted its first comprehensive Bylaws in 1991 by the Library of Congress to formalize its procedures and establish an updated organizational structure.

In the course of these changes, FLICC has established itself as the federal interagency advisory committee that provides leadership and assistance to the nation's federal libraries and information centers, which number approximately 2,500 institutions stretching from coast to coast, extending to Alaska and Hawaii, and reaching Europe and other parts of the globe.

FLICC's purpose is to achieve better utilization of federal library and information center resources and facilities through professional development, promotion of services, and coordination of available resources. FLICC is also responsible for making recommendations on federal library and information policies, programs, and procedures to federal agencies and to others concerned with libraries and information centers.

Through FEDLINK (Federal Library and Information Network), a cooperative program established in 1978, FLICC also offers any federal agency cost-effective access to information and operations support services from commercial sources.

To accomplish these objectives, FLICC draws on the resources of the federal government libraries and information centers. Under the 1991 FLICC Bylaws that broadened membership, FLICC is composed of 57 federal agency members. The 32 members designated as permanent members include the directors of the three national libraries—the Library of Congress, the National Library of Medicine, and the National Agricultural Library—and representatives of the cabinet-level executive departments and other federal agencies with major library programs. Other FLICC members include 15 rotating representatives directly elected by FEDLINK members, nine rotating members elected by the permanent FLICC members, and the chair of the FEDLINK's Advisory Council.

Volunteers from federal libraries and information centers support wide ranging FLICC programs through FLICC Working Groups which focus on federal information policy issues, education, preservation, library binding, personnel, other issues, and cooperative endeavors.

For further information about FLICC services and programs, write to FLICC, Library of Congress, Washington, DC 20540; telephone FLICC at (202) 707-4800; or fax FLICC at (202) 707-4818. FLICC also maintains the FEDLINK Fiscal Operations Hotline at (202) 707-4900 and the ALIX Bulletin Board at (202) 707-4888.

Mary Berghaus Levering
FLICC Executive Director

12/92

The 1992 FLICC Forum on
Federal Information Policies (9th)
March 17, 1992

The Future of Government Information: Money, Management, and Technology

Summaries of Proceedings
Prepared by Carolyn Mulford

Federal Library and Information Center Committee
Library of Congress, Washington, DC 1992

Previous FLICC Forums

The First Annual FLICC Forum on Federal Information Policies:
Emerging Issues on Managing Information Resources, February 15, 1984

The Second Annual FLICC Forum on Federal Information Policies:
The International Flow of Scientific and Technical Information, February 27, 1985

The Third Annual FLICC Forum on Federal Information Policies:
Their Implementation on Implications for Information Access, February 12, 1986

The Fourth Annual FLICC Forum on Federal Information Policies:
Views of a Concerned Community, February 25, 1987

The Fifth Annual FLICC Forum on Federal Information Policies:
The Impact on Competitiveness, March 7, 1988

The Sixth Annual FLICC Forum on Federal Information Policies:
The Congressional Initiative, March 22, 1989

The Seventh Annual FLICC Forum on Federal Information Policies:
Access is the Key, March 20, 1990

The Eighth Annual FLICC Forum on Federal Information Policies:
Building Information Superhighways: Supercomputing Networks and Libraries, February 15, 1991

Acknowledgments

The annual FLICC Forums on Federal Information Policies are arranged under the auspices of the FLICC Education Working Group which was chaired in 1992 by W. Fred Rettenmaier, Office of the Chief of Naval Research. Each year, volunteers from the FLICC Education Working Group serve with an Ad Hoc FLICC Forum Working Group composed of information experts. This Ad Hoc Working Group selects a topic, identifies speakers, and helps prepare the Forum program. FLICC wishes to express its appreciation to the FLICC Education Working Group, particularly of the FLICC Education Working Group members Donald Fork, Department of Education, and Robert Gardner, Postal Service, and of five Library of Congress (LC) Congressional Research Service (CRS) staff members, Harold Relyea, Jane Bortnick Griffith, Catherine Jones, Lynne McCay, and Steven Gould..

Summaries Written By: Carolyn Mulford

Editors: Darlene Dolan, Ann-Kristin Bohlin, Richard Cermak, and Jennifer Noble

Copyright

© 1992 Gary Bass, Executive Director, OMB Watch, "Cost/Cost Recovery Issues at the Federal Level"
© 1992 Dr Joseph E. Clark, Deputy Director, US National Technical Information Service, "Government Perspectives"
© 1992 Dr. Thomas J. Galvin, Professor, Department of Information Science and Policy, University of Albany, SUNY, "Emerging Roles for Libraries and Information Centers "
© 1992 Colin Hensley, Database and Informatics Officer, Delegation of the Commission of the European Communities, "The European Community Information Policy Program"
© 1992 Dr. Robert E. Kahn, President, Corporation for National Research Initiatives, "Dissemination of Electronic Government Information: New Roles for Old Players "
© 1992 Mitchell Kapor, President, The Electronic Frontier Foundation, Cambridge, MA, "A Vision of the Future"
© 1992 Ed Levine, Senior Policy Coordinator for Information Technology, State of Washington Office of Financial Management, "State Innovations in Managing Electronic Information "
© 1992 Dr. Charles R. McClure, Professor, School of Information Studies, Center for Science and Technology, Syracuse University, "Developing Government Information Inventory Locator Systems and Other Sources "
© 1992 Dr. W. David Penniman, President, Council on Library Resources, "New Linkages for Library Resources "
© 1992 George B. Trubow, Professor of Law and Director of the Center for Informatics Law, The John Marshall Law School, "Current Policy Issues Relating to Government Information"

Deposited in ERIC and NTIS
ISSN 1061-7485

Table of Contents

The 1992 FLICC Forum on Federal Information Policies—The Future of Government Technology: Money Management, and Technology

Forum Call 1
Forum Agenda 2
Summary of Proceedings

Introductory and Special Remarks

Mary Berghaus Levering, Executive Director, FLICC
Donald Curran, Associate Librarian for Constituent Services, Library of Congress
James Billington, The Librarian of Congress, Library of Congress 3

Keynote

Congressional Policy Initiatives Regarding Availability of Federal Government Information and the Role of the Joint Committee on Printing
The Honorable Charlie Rose (D-NC), Chairman, Joint Committee on Printing, U.S. House of Representatives 3

A Vision of the Future
Mitchell Kapor, President, The Electronic Frontier Foundation 4

Part I: Current Policy Issues Relating to Government Information

Presiding
George B. Trubow, Professor of Law and Director of the Center for Informatics Law, John Marshall Law School 5

Public Access in Government and its Cost
Gary D. Bass, Ph.D., Executive Director, OMB Watch 5

Dissemination of Electronic Government Information: New Role for Old Players
Robert E. Kahn, President, Corporation for National Research Initiatives 6

The Changing Information Marketplace: Government and Industry Roles Government Perspectives
Joseph E. Clark, Deputy Director, U.S. National Technical Information Service 7

Industry Perspectives: Keeping Access to Government-Produced Information Open—The Falacy of Information as a Government Profit Center
Gerald E. Yung, Vice President of Government Affairs, Mead Data General 8

Part II: Case Studies—Problems, Priorities and Challenges

Presiding
Dr. Toni Carbo Bearman, Dean and Professor, School of Library and Information Science, University of Pittsburgh 9

Census Data Case Study
John C. Kavaliunas, Chief, User Training Branch, Data User Services Division, U.S. Bureau of the Census 9

The Patent and Trademark Office Example: Managing Massive Amounts of Data and Delivering It to the Public
Thomas P. Giammo, Assistant Commissioner for Information Systems, U.S. Patent and Trademark Office 10

State Government Innovations in Managing Electronic Information
Ed Levine, Senior Policy Coordinator for Information Technology, State of Washington, Office of Financial Management 10

The European Community Information Policy Program
Colin Hensley, Database and Informatics Officer, Delegation of the Commission of the European Communities 11

Question-and-Answer Session 11

Part III: Changing Information Infostructure

Presiding
William W. Ellis, Associate Librarian for Science Technology Information, Library of Congress 12

Emerging Roles for Libraries and Information Centers
Thomas J. Galvin, Professor, School of Information Science and Policy, University of Albany 12

New Linkages for Library Resources
W. David Penniman, President, Council on Library Resources 13

Developing Government Information Inventory Locator Systems
Charles R. McClure, Professor, School of Information Studies, Center for Science and Technology, Syracuse University 13

Part IV: Approaches and Opportunities

Discussion and Wrap-up
Thomas J. Galvin, Professor, School of Information Science and Policy, University of Albany 14

Papers

Congressional Policy Initiatives Regarding Availability of Federal Government Information and the Role of the Joint Committee on Printing
The Honorable Charlie Rose (D-NC), Chairman, Joint Committee on Printing, U.S House of Representatives 19

A Vision of the Future
Mitchell Kapor, President, The Electronic Frontier Foundation 22

Keeping Access to Government-Produced Information Open: The Fallacy of Information as a Government Profit Center
Gerald E. Yung, Vice President of Government Affairs, Mead Data General 26

Census Data Case Study
John C. Kavaliunas, Chief, User Training Branch, Data User Services Division, U.S. Bureau of the Census 29

The Patent and Trademark Office Example: Managing Massive Amounts of Data and Delivering It to the Public
Thomas P. Giammo, Assistant Commissioner for Information Systems, U.S. Patent and Trademark Office 32

State Innovations in Managing Electronic Information
Ed Levine, Senior Policy Coordinator for Information Technology, State of Washington, Office of Financial Management 38

The European Community Information Policy Program: Establishing Information Priorities
Colin Hensley, Database and Informatics Officer, Delegation of the Commission of the European Communities 40

Emerging Roles for Libraries and Information Centers
Thomas J. Galvin, Professor, School of Information Science and Policy, University of Albany 43

New Linkages for Library Resources
W. David Penniman, President, Council on Library Resources 46

Approaches and Opportunities: Discussion and Wrap-Up
Thomas J. Galvin, Professor, School of Information Science and Policy, University of Albany 49

1992 FLICC Forum on Federal Information Policies
Tuesday, March 17, 1992

The Future of Government Information: Money, Management, and Technology

FORUM CALL

As the Nation embarks upon the final decade of the twentieth century, government information policy is in a condition of great flux. Electronic formats are rapidly paralleling, competing with, and replacing traditional paper forms, and burgeoning new technologies are awaiting application. Financial resources at all levels of government in the United States are becoming more scarce, and newer information technologies cannot be readily acquired, applied, and upgraded. Furthermore, controversy grows over the notion of information as a commodity and its sale as a source of government revenue with arguments for access and the concerns of the private sector adding to the complexity of this issue. Statutory and regulatory innovations-such as OMB's Circular A-130 revisions, Freedom of Information Act reforms, and the Paperwork Reduction Act reauthorization-do not appear to be at hand. Therefore, skillful management, including both doing more with less and sound use of information resources, is needed more than ever before.

At this time of uncertainty, the ninth annual FLICC Forum on Federal Information Policies concentrates on three key variables in government information policy and practice: money, management, and technology. Speakers and panelists, addressing various timely topics of discussion, will consider government information and the interrelationship, application, and measured effect of these variables with special emphasis on questions relating to dissemination of government information in electronic format. Discussions of selected case studies will explore these and related issues as part of the Forum's agenda. Among the questions being explored at this year's Forum are:

- What are the cost and cost recovery issues relating to government information?
- How should agencies and others establish priorities in the allocation of diminishing resources?
- How are government's and industry's roles changing in the information marketplace?
- How is the information infostructure changing?
- What are some of the innovations being tried by state governments in managing electronic information and how successful are these?

These and other issues that relate to government information, its creation, and dissemination, will be the focus of the 1992 FLICC Forum.

The Federal Library and Information Center Committee (FLICC) was established in 1965 as the Federal Library Committee to provide leadership in addressing policy issues that affect the dissemination of information to government employees and the general public. In line with this mandate, FLICC has arranged for forums on federal information policy, which have become an annual status report on information access and dissemination policies for the federal library and information center community and throughout the world.

Federal Library and Information Center Committee

NINTH ANNUAL FORUM ON FEDERAL INFORMATION POLICIES:

The Future of Government Information— Money, Management and Technology

Tuesday, March 17, 1992
Mumford Room, 6th floor, James Madison Memorial Building
Library of Congress, First Street and Independence Avenue, SE, Washington, DC

8:30 a.m. **Registration and Coffee**

9:00 a.m. **Welcome, Introduction and Program Overview**
Mary Berghaus Levering, FLICC Executive Director
Donald C. Curran, Associate Librarian for Constituent Services, Library of Congress
James H. Billington, The Librarian of Congress

9:15 a.m. **Keynote:** ***Congressional Policy Initiatives Regarding Availability of Federal Government Information and the Role of the Joint Committee on Printing***
The Honorable Charlie Rose, (D-N.C.), Chair, Joint Committee on Printing

9:35 a.m. ***A Vision of the Future***
Mitchell Kapor, President, The Electronic Frontier Foundation, Cambridge, MA

10:00 a.m. **Coffee Break**

10:25 a.m. ***PART I—CURRENT POLICY ISSUES RELATING TO GOVERNMENT INFORMATION***
Presiding—George B. Trubow, Professor of Law and Director of the Center for Informatics Law, The John Marshall Law School

Cost/Cost Recovery Issues at the Federal Level
Gary Bass, Executive Director, OMB Watch

Dissemination of Electronic Government Information: New Roles for Old Players
Dr. Robert E. Kahn, President, Corporation for National Research Initiatives

Changing Information Marketplace: Government and Industry Roles — Points of View
- Government Perspectives—Dr. Joseph E. Clark, Deputy Director, US National Technical Information Service
- Industry Perspectives—Gerald E. Yung, Vice President of Government Affairs, Mead Data Central

Discussion

12:15 p.m. **Lunch** (on your own)

1:30 p.m. ***PART II—CASE STUDIES: PROBLEMS, PRIORITIES AND CHALLENGES***
Presiding—Dr. Toni Carbo Bearman, Dean and Professor, School of Library and Information Science, University of Pittsburgh

Census Data Case Study
John C. Kavaliunas, Chief, User Training Branch, Data User Services Division, US Bureau of the Census

The Patent and Trademark Office Example: Managing Massive Amounts of Data and Delivering It to the Public
Thomas P. Giammo, Assistant Commissioner for Information Systems, US Patent and Trademark Office

State Innovations in Managing Electronic Information
Ed Levine, Senior Policy Coordinator for Information Technology, State of Washington Office of Financial Management

The European Community Information Policy Program
Colin Hensley, Database and Informatics Officer, Delegation of the Commission of the European Communities

3:00 p.m. **Coffee Break**

3:15 p.m. ***PART III—CHANGING INFORMATION INFOSTRUCTURE***
Presiding—Dr. William W. Ellis, Associate Librarian for Science Technology Information, Library of Congress

Emerging Roles for Libraries and Information Centers
Dr. Thomas J. Galvin, Professor, Department of Information Science and Policy, University of Albany, SUNY

New Linkages for Library Resources
Dr. W. David Penniman, President, Council on Library Resources

Developing Government Information Inventory Locator Systems and Other Sources
Dr. Charles R. McClure, Professor, School of Information Studies, Center for Science and Technology, Syracuse University

4:15 p.m. ***PART IV—Approaches and Opportunities: Discussion and Wrap-Up***
Dr. Thomas J. Galvin, Professor, Department of Information Science and Policy, University of Albany, SUNY

4:45 p.m. **Adjournment**

Introductory and Special Remarks

Mary Berghaus Levering
Executive Director, FLICC

Donald C. Curran
Associate Librarian for Constituent Services,
Library of Congress

James H. Billington
The Librarian of Congress

Mary Berghaus Levering welcomed participants to the 1992 FLICC Forum on Federal Information Policies. The ninth annual FLICC Forum focused on translating 1991s visions of networked information superhighways into reality. Addressing the Forum's theme of "The Future of Government and Information: Money, Management, and Technology," FLICC asked speakers to consider three thematic variables in this light:

- Money—the funding that turns talk into action;
- Management—the expertise necessary to see the job through;
- Technology—the most advanced and efficient process to reach the desired end.

FLICC drew on the expertise of the federal library community in planning the program. Levering cited the assistance of the FLICC Education Working Group, particularly of the FLICC Education Working Group members Donald Fork, Department of Education, and Robert Gardner, Postal Service, and of five Library of Congress (LC) Congressional Research Service (CRS) staff members, Harold Relyea, Jane Bortnick Griffith, Catherine Jones, Lynne McCay, and Steven Gould.

Chair Designate of the Federal Library and Information Center Committee (FLICC), Donald C. Curran, Associate Librarian for Constituent Services, LC, provided an overview for this first Forum since the passage of legislation establishing the National Research and Education Network (NREN). Since 1984 the FLICC Forums have helped members of the federal library and information center community look at changes that affect federal information policy, and evaluate what systems work well and what the future holds. The 1992 Forum theme echoes the 1984 Forum theme: *Emerging Issues on Managing Information Resources*. Curran stressed that the speakers are information managers who take the hazy concept of the "Information Age" and make it work.

Librarian of Congress, James H. Billington noted that since the last Forum, FLICC has approved its first *Bylaws* and succeeded in tightening management controls on the FEDLINK program. Entering its second quarter century, FLICC serves 1,400 federal agencies and represents an estimated 2,400 federal libraries and information centers worldwide.

Many of FLICC's activities have a bearing on a number of LC activities, including tying into the Capitol Hill computer network, upgrading the electronic card catalog, making key American history collections accessible to teachers and students on disk or in other formats, and developing a science and technology information center that provides an electronic "yellow pages" to key databases and specialized networks.

Billington said, "Someday, the Library of Congress, thanks to advanced technology, will truly become a 'library without walls', making accessible online its vast resources to libraries, schools, and industry across the country. In this age of information, with the 100 millionth item about to be welcomed into LC, the work of government libraries will remain vital to our knowledge-based democracy and to our ability to prosper in a harshly competitive world."

Billington then introduced keynote speaker Congressman Charlie Rose (D-NC), noting that Rose was appointed to lead a House task force on computerization in the early 1970s and "has been recognized as one of the leading forces nudging the Congress into the modern electronic age."

Keynote: Congressional Policy Initiatives Regarding Availability of Federal Government Information and the Role of the Joint Committee on Printing

Congressman Charlie Rose (D-NC)
Chairman, Committee on House
Administration,
Chairman, Joint Committee on Printing
U.S. House of Representatives

Rose said that the future of government information depends greatly on how those in government balance and use money, management, and technology.

Recognition of the importance of government printing and publication goes back to the Constitutional Convention and the provision in Article I of the Constitution that mandates each house of Congress "shall keep a Journal of its Proceedings, and from time to time publish the same. ..."

In 1846 a law authorized publication of Congressional materials and created the Joint Committee on Printing (JCP), which Rose has chaired since 1991. Rose is concerned that government information remain a public asset equally available to all, declaring that "Technological and policy barriers to access must be virtually eliminated."

Recently the JCP has undertaken several initiatives to enhance the availability of federal government information.

To effect savings and eliminate waste, the JCP has increased recycling of printing and writing papers throughout the federal government and enforced new paper specifications that most state and local governments are accepting as standards. The federal government has become the biggest recycled-paper buyer in the country.

To improve management, the JCP will follow through on the recent audit of the General Printing Office (GPO) conducted by the General Accounting Office (GAO), and guide current efforts to produce a long term plan for GPO itself through the GPO/2001 projections.

To increase the use of technology, GPO has completed (and awaits final evaluations of) five pilot projects for the electronic distribution of government information to depository libraries. These include providing the *Congressional Record* in CD-ROM format and delivering the *Economic Bulletin* online to 120 libraries.

The April 25, 1991, JCP oversight hearing evidenced deep concern that much information gathered at public expense is not reaching the depository library system. Rose has introduced the GPO Wide Information Network for Data Online Act (H.R. 2722), known as WINDO, to establish in GPO a single point of online public access to a range of electronically stored federal databases. He hopes WINDO will "encourage true value-added activity in the private sector."

Rose looks to practitioners for foresight and welcomes input from FLICC's members in working toward a common objective of educating the people so that the JCP may exercise wisely its ultimate powers.

A Vision of the Future

Mitchell Kapor
President, The Electronic Frontier Foundation

Founder of Lotus, Mitchell Kapor said that we are still pioneers in the Information Age and that technology must become more usable before "cyberspace" becomes a friendly environment.

Information is the new property in cyberspace, and battles there over intellectual property are being fought in much the way range wars were fought during Western expansion. Contrasting cyberspace with physical space, Kapor pointed out that in physical space, the property owner has the right to exclude others from access and use. Cyberspace, which deals with information in digital form, has a distinctly different characteristic which must be considered: information can be copied and used simultaneously by an infinite number of users. Exclusivity of access to cyberspace should not be awarded using the same restrictions that govern physical space.

The government and the private sector both have roles to play in managing information resources. The government has to take the lead in making information widely available in such areas as health, the environment, and law enforcement where private industry lacks the incentive to do the job. Legislative and policy experts must work out the complicated issues of how government and the private sector will divide the responsibilities.

Meanwhile, the computer industry needs to take on the responsibility of solving the technological problems that make computers difficult to use. Great progress has been made. It should be comforting to recall that Gutenberg's invention of movable type did little to change books initially. It took a century to make books the portable, readable medium that served as the basis for the development of democracy.

Comparatively, computer technology is in the preindustrial stage of evolution. For instance, no two online databases work the same way. Those building, or using, new systems must start from scratch each time they undertake the development of access. For software, we have not yet entered the industrial age with its manufacture of standard, interchangeable parts.

These problems are transient, but they are important today. Better off-the-shelf tools and common standards are needed in order to cut the cost of turning raw information collected by the government into usable, accessible data. Building better bit pipes will not be enough. Interchangeable software components are needed to make electronic publishing and dissemination of information possible.

It will take a public/private partnership to reach the next stage. Government has an important role in leading and coordinating the effort, and the private sector will invest capital and develop services. Internet is a good example of how the partnership can work.

If everybody works independently, the United States will remain on the frontier of the Information Age. Building the right infrastructure can provide diverse information to multiple constituencies with relative ease.

Part I: Current Policy Issues Relating to Government Information

Presiding—
George B. Trubow
Professor of Law and
Director, Center for Information Law
John Marshall Law School

George B. Trubow served as moderator of the first panel discussion. He predicted that information policy, and particularly information management, will be major national and international issues during the next decade.

Government needs to take a leading role in making information and information technology available to the people. Trubow's clandestine transferal of independent reporter Hedrick Smith's book *The Russians* to a student during a visit to Moscow at the beginning of the period of glasnost made him realize anew that public access to information can not be taken for granted.

Trubow expressed particular concern about personal informational privacy in the United States. European countries seem to be ahead of the U.S. in recognizing privacy is a fundamental human right and in protecting personal information.

He introduced the discussion of what government information should be available to the people and the question of how to manage it and to deal with the cost of providing it.

The Department of Health, Education, and Welfare developed fair information practice principles in the 1970s that stated information should be accurate, relevant, and complete; that an individual has the right to see and challenge personal information; and, most important, that personal information should be used only for the purpose for which it was collected.

Today all levels of government are anxious for revenue, so officials are emphasizing that they are providing not only information but also information services and, therefore, have the right to charge for the value their efforts have added to the information. This raises numerous questions regarding the propriety of charging for information, the relationship between government and the private sector in terms of licensing, and the relationship between various levels of government, local, state, and federal, all of which want a share of the charges for their value-added "service."

Public Access in Government and Its Cost

Gary D. Bass, Ph.D.
Executive Director,
OMB Watch

The control of information is a major issue in government today, leaving public access through electronic means as only one facet of the problem, according to Gary Bass. Four examples of information control follow.

The penchant for secrecy in government is epitomized by Vice President Quayle's Council on Competitiveness. OMB Watch filed Freedom of Information Act requests to try to find out what the council does, its mission, its staffing, and the activities it is, or was, working on. The requests were denied. Even congressional inquiries for information were refused. Yet, the council is substantively involved in federal rulemaking.

Public access used to be a four-letter word in Washington. When Bass spoke at an Environmental Protection Agency conference a few years ago, he was warned that a discussion about public access would not be well received. That attitude is changing, but questions of how to improve the cultural environment for public access within government agencies still remain.

The United States lacks regulations on information services. One example is the use of 900 numbers. Recently a regional telephone company refused to permit a church group to establish a 900 number for giving callers the groups' position on policy issues without first reviewing the script. Since the script changed frequently, this was not feasible for the group.

Bass sees less progress than he would like in the areas of "right to know" and public access. The recent *Rust v Sullivan* Supreme Court decision widely known as an abortion "gag rule" could have implications for other groups that receive federal funding. The government could control the books that libraries buy or display if those libraries receive some federal funding.

To assure public access, forward progress is needed in three ways. First, it is vital to develop a very broad constituency that goes beyond the library and information community. Government should think of information as a public service to be made available to all, rather than solely as a revenue source or commodity. The Reagan/Bush administrations have thought of information as a commodity first, and only a broad-based constituency can change this view.

Second, it is necessary to work for policy changes by promoting government-wide, agency-wide, and program-specific proposals. The Paperwork Reduction Act (PRA) Reauthorization contains a section on dissemination and is an example of a government-wide approach. Rep. Major Owens (D-NY) also has proposed a dissemination bill in the House. Another government-wide approach is the implementation of a Federal Information Location System (FILS), mandated in 1980, which still has not been carried out. A final government-wide approach is OMB's Circular A-130 management of Federal Information Resources, soon to be published.

An example of an agency-wide effort is the bill to establish the Environmental Protection Agency (EPA) as a cabinet-level department. The House bill contains a component on information dissemination, unopposed by the Administration, that contains the kind of language that should be used in other bills. Lastly, the Toxic Release Inventory, authorized by the Emergency Planning and Community Right to Know, requires that data regarding toxic waste be provided to any person through computer telecommunications and other means. Such program-specific legislation should be replicated.

Third, the cultural environment in agencies has changed. EPA was brought into public access kicking and screaming, but now it is pushing for public access because public access helps EPA carry out the agency's mission.

Cost/fee issues are by-products of these three points. OMB Watch is working on the Federal Maritime Commission issue, which involves turning to an automated rate tariff system for revenue to offset the loss of user fees for recreational boats that are more than 16 feet long. This constitutes taxing the reuse of information — an unprecedented policy. To take this issue to its full extreme: when Congress needs to raise more revenue, it could charge for the reuse of such things as the *Federal Register*.

Not only should the government not charge for reuse, but a first principle on dissemination is holding fees to the marginal cost. Marginal cost means that one cannot charge for the collection and manipulation of government data, but only the actual process of putting it in the hands of the public. It's also crucial to find a way of economizing on dissemination routes and making costs/fees more uniform. Charges often are absurd. For example, a CD-ROM that costs $2 to produce can sell for $250 or even as high as $500.

If the principle of "equal and equitable" access to all people is implemented, then there must be provision for fee waivers and reduced prices. Cost should not be a barrier to public access.

Dissemination of Electronic Government Information: New Roles for Old Players

Robert E. Kahn
President, Corporation for National Research Initiatives

Robert E. Kahn's involvement in networking dates back to the ARPANET in the late 1960s and the development of the technology that has evolved into today's Internet. Since 1985 he has been working to foster research and development for a national information infrastructure. He said the informational world has become as real an entity as the physical world, and much of the debate surrounding information concerns how we will use information technology in the future.

In hearings on NREN years ago, Kahn argued that the nation needs information infrastructure on both higher and lower levels: one that might provide

individuals in their homes with access via a fiber optics system to a digital library system, and one that might provide others access to a national knowledge bank for science and technology.

Leveraging information technology will be one of the great areas of gain in the next century. Many of the issues inherent in developing a national digital library are independent of specific technology choices but some are not. Among the questions that will need to be addressed are how to price network-based services, how to deal with work-in-progress, plus value-added capabilities and services, and how to provide access to and control of services. A major question is: What kind of value-added services does the government need to accomplish its own work? The private sector can handle most value-added services, but the government must be responsible for some services.

Some concerns are architectural. Kahn has been working with organizations such as the National Library of Medicine (NLM), the National Science Foundation (NSF), and private enterprise on system architecture. Users will not have to know how the system works internally to gain access to information. This function will be performed by knowledge robots or "knowbots". This trend toward user-friendly technology will continue to evolve.

Digital library systems also will provide multiple databases on a network, a marketplace for information providers, a consolidation mechanism for transactions, simple specifications that can effect powerful retrievals, and no critical bandwidth dependencies.

Information sources, or agents, are computer programs that serve as problem specialists, individual or organization user systems. Brokers are computer programs that will feed into the communication networks and serve as domain specialists. Decisions will have to be made about what material goes into what depository. Users will not need to know where the material is and will not have to describe it in implementation terms.

Major questions are: What is available? What does it do? How do you use it? How do you cope with the diversity of the results provided? To do a good job of retrieval for users, the system needs communication language in the form of ontologies for each area. Initially it may have to rely on simple languages. Later, the system uses complex interlingua and a variety of agents (programs that can wander around the system like knowbots). The knowbot structure will be both content and context dependent.

Effective use of bandwidth is essential. Small documents in text-only databases may require only kilobits per second, but large databases with graphic images may require megabits per second, and multimedia needs gigabits/terrabits or even more.

Librarians, carriers, universities, researchers, computer and software companies, publishers, cable systems, broadcasters, and government are all interested in these applications.

Intellectual program issues include ease of reproduction and manipulation, lack of control by rightsholders, authenticity of material, warranties of accuracy, copyright management, and rights beyond the canonical five of reproduction, distribution, derivative works, public performance, and public display. What will be the library's role: publisher, carrier, or supplier? A recent case involving this issue was, *Feist v. Rural Telephone*, which involved rights to information in the public domain.

A first version of the Knowbot Information Services was built to search a distributed white pages database (i.e., one with no central directory). In this scenario users asked a question about the network mailbox for a given individual and a Knowbot program gathered the answer if it found it (or multiple answers if appropriate) and brought it back in one commonly formatted reply. Knowbot technology also can be used in accessing the NLM databases.

The Changing Information Marketplace: Government and Industry Roles Government Perspectives

Joseph E. Clark
Deputy Director, U.S. National Technical Information Service

As a federal government employee, Joseph E. Clark makes three general assumptions about the government's role in the information marketplace:

- Government is responsible for, and to, an informed citizenry;
- The federal government is a major creator, distributor, and user of information;
- Information flow should be as barrier-free as possible.

Writers like Tom Clancy have found information about constructing nuclear weapons in the files of National Technical Information Service

(NTIS) and other agencies, proving the value of older information to some individuals.

Government information policies are not uniform throughout the government. Operating policies for government agencies are mission-specific. Furthermore, policy is evolving, and money, management, and technology will drive changes during the next decade.

The money issues involve costs, prices, and identifying who will pay. The balance between appropriations and user fees is constantly changing. Information is never free, but the question is whether the payment for information comes from all citizens, a designated group, or individuals. User fees are driving the information marketplace from the management standpoint.

At NTIS, all funds come from user fees for approximately 10,000 items a day. In 1988, NTIS was given the authority to participate in joint ventures with private organizations, sharing the risks and rewards. The agency has three lines of business: the traditional clearinghouse, services to other agencies (such as producing CD-ROMs), and licensing patents owned by federal inventors. Not all the joint ventures undertaken have worked out, but seven are earning revenue. Because the joint ventures are new, NTIS operates with few constraints, and its operation may be a harbinger of things to come.

The 1980s saw a major shift in NTIS revenue patterns. From 1981 to 1991, the share of revenue from electronic products increased fivefold, from 6 percent to 28 percent. The share for printed products fell from 73 percent to 59 percent and for microfiche from 21 percent to 13 percent.

In 1984 NTIS began a quality management program to involve employees in management decisions. In 1985 it was found that about 25 percent of phone calls went unanswered; by 1991 there was an improvement to only 1.5 percent of unanswered calls. In the last three fiscal years quality has risen measurably. Order fulfillment time decreased from 14 days in 1989 to 9 days in 1990 and finally 6.4 days in 1991.

The various media used to disseminate information, beginning with stone tablets, still have their applications, but the American Technology Preeminence Act specifies that NTIS is to produce and disseminate information in electronic formats. By November 1992 there will be a report on the feasibility of the Federal Online Information Product Catalog (FEDLINE).

Clark foresees a more uniform general policy (perhaps in OMB Circular A-130), agency strategies driven by technology, and networks of one-stop shops.

Industry Perspectives: Keeping Access to Government-Produced Information Open—The Fallacy of Information as a Government Profit Center

Gerald E. Yung
Vice President of Government Affairs,
Mead Data Central

As a representative of the company that provides the LEXIS and NEXIS electronic information services, Gerald E. Yung expressed concern over the growing tendency of government agencies to treat information as a source of revenue. He said this could frustrate the public and slow the growth of the American information industry, one of the few industries to product a substantial trade surplus.

Many government agencies exist primarily to collect, maintain, and disseminate certain kinds of information. Government has an interest in informing its citizens. If the government sells information priced according to need to know or commercial value, the cost will increase, the government will begin restricting its use, and private firms will find redistribution less attractive. Public access will suffer.

Yung gave some examples of the trend. Federal legislation is pending to impose a royalty on the use of Federal Maritime Commission tariff information. The Colorado legislature passed legislation making it illegal to copy the Colorado Revised Statutes without paying a fee. In New York, the legislature's revisor's office set up an online legislative tracking system in competition with one run by a company and refused to let the company subscribe to the state system. The Federal Court of Appeals forced the state to give access to this basic information.

Yung said that some of the worst examples come from secretary of state offices. In New Jersey the secretary of state charges the public for call-in requests for information from their filings. The Delaware secretary of state refuses to make a file tape available and allows only a one-record-at-a-time search through a gateway.

Producing revenue is not the only reason agencies restrict access to information. Recently the city of Cleveland refused to give a doctoral student a copy of a computer tape containing 10 years of police dispatch information records. The city offered

to make the information available in printed form, and the Supreme Court of Ohio ordered the city to produce the tape after noting that the concept of a public record relates to the information itself rather than the medium on which it resides.

Federal law supports access to government-produced information, with a few exceptions, and agency practice generally is close to the law. Federal and state decisions consistently have said that access to public records must be encouraged, not impeded.

Today there are attempts to refine these principles, including those undertaken through OMB A-130 and the Paperwork Reduction Act. The state activity has been much more fragmented, but this may be changing.

Many policy studies have been written on this subject, one of the best being the 1986 report of the Committee on Government Operations. The Information Industry Association's White Paper sets forth six key principles for guidance and summarizes the legal framework for information law in the United States. Giving up our tradition of open access to government information in the name of profit would be a poor bargain.

Part II: Case Studies—Problems, Priorities, and Challenges

Presiding—
Dr. Toni Carbo Bearman
Dean and Professor, School of Library and Information Science, University of Pittsburgh

Dr. Toni Carbo Bearman, Dean and Professor, School of Library and Information Science, University of Pittsburgh, presided over the afternoon panel on *Case Studies—Problems, Priorities, and Challenges.*

Census Data Case Study

John C. Kavaliunas
Chief, User Training Branch, Data User Services Division, U.S. Bureau of the Census

The 1990 census information has been produced in electronic formats that make it available to smaller institutions and individuals than ever before, according to John C. Kavaliunas. It represents a "democratization of data."

The Census Bureau has been a pioneer in information technology. The founder of IBM developed the punch card at the Census Bureau in 1890. In 1960 the Bureau experimented with releasing computer files that, ironically, it no longer has the technology to read. The Bureau's support of the use of computer tapes helped spawn an entire industry in the 1970s.

In the 1980s the demand to provide for census data on floppy diskettes for personal computers arose, but the disks could not accommodate huge census files, so the Census Bureau began experimenting with CD-ROMs. It was the first federal agency to issue CD-ROMs, and in January 1992 the sale of CD-ROMs surpassed that of computer tapes. The 1980s also saw the development of CENDATA, an online service carried by DIALOG and CompuServe.

Four factors have facilitated the Census Bureau's success in working toward the goal of increasing public access.

First, the Bureau has relied on multiple distribution points, intermediaries, and dissemination multipliers. In many ways the Bureau acts as a wholesaler, relying on intermediaries—including state data centers, business and industry data centers, private companies, and federal depository libraries—to repackage the product for the public.

Second, the Bureau has made more data available on a greater variety of formats to the diverse community of users.

Third, the Bureau has assisted users in accessing, converting, and using the data with popular personal computer software packages like dBase and Lotus 1-2-3.

Fourth, the Census Bureau keeps pace with changing technology and ways in which the Bureau can meet the anticipated users' needs. For the 2000 census, promising technologies such as mini personal computers, write-once CD-ROMs, and higher density computer tapes and cartridges are being investigated.

The technology will affect access points, such as libraries. Librarians will have to determine how to assist users with electronic media, and continually evaluate users' needs, budget for equipment, and train staff.

The Census Bureau welcomes input from the federal library community on how it can help make information more readily available to the public.

The Patent and Trademark Office Example: Managing Massive Amounts of Data and Delivering It to the Public

Thomas P. Giammo
Assistant Commissioner for Information Systems, U.S. Patent and Trademark Office

The Patent and Trademark Office (PTO) dates back 200 years, said Thomas P. Giammo. Half of its purpose has been to issue patents, and the other half has been to disseminate information about patents.

Initially, the PTO built a duplicate of each item that received a patent for those interested to see. Waves of technology have made it impossible for this practice to continue and the PTO continues to search for effective ways to disseminate information on patented items. The introduction of microfilm was a breakthrough in information dissemination. Suddenly people did not have to travel to Washington, DC to get information. They could access the depository library system instead. In the 1940s and 1950s PTO moved toward a new orientation in dissemination.

The continuing introduction of new technology is forcing the PTO to reassess information dissemination in terms of the agency's mission. There is a tendency to interpret it in terms of old relationships, of putting terminals in the search rooms and CD-ROMS in the depository libraries, for example. But now that the PTO can rethink the agency's mission from scratch, the possibility of keeping the present mechanisms while also directly reaching the end users including researchers and students in universities can be considered.

The PTO has formulated a new version of its information dissemination policy stressing the obligation to ensure that relevant technical information reaches the public. PTO does not have to deliver that information directly; it can work in partnership with the private sector and various libraries to do that.

To date there is an intellectual understanding of the problem. The PTO has not really moved to the next stage of creating access for the public at large. Congress added a phrase saying that the PTO should provide direct access to databases to the public but did not define the time frame or methods for achieving this. The PTO is using technology to enhance database sales. Mead Data Central is building up wholesale data.

The PTO is on the verge of issuing a trademark CD-ROM. There is a concern that current technology, including CD-ROM, will guarantee only a relatively short life span because the storage capacity is too limited for the needs. For example, two CD-ROMs hold only one week's release of patents. Online access will extend patent information to depository libraries, but the relatively low-bandwidth system cannot accommodate the accompanying images.

The PTO is looking ahead to: the ability to browse at the rate of three-fourths of a second per page, remote facsimile of images on demand, overnight downloading of subsets of patent image files to research and development centers, CD-ROM standards conforming to those of European and Japanese patent offices, and direct remote access to files.

It seems plausible and economical to open patent files to the public sometime within the next three to four years.

State Government Innovations in Managing Electronic Information

Ed Levine
Senior Policy Coordinator for Information Technology,
Office of Financial Management,
State of Washington

Ed Levine described himself as neither an information expert nor a spokesman for the state of Washington, but said that money, management, technology are important topics to state and local governments.

Levine began by giving competing visions, starting with that of Vaclev Havel, who wrote that we do a better job of collecting information than of using it to save civilization. "We have to abandon the arrogant belief that the world is merely a puzzle to be solved, ... a body of information to be fed into a computer in the hope that, sooner or later, it will spit out a universal solution."

David Osborne wrote that all levels of American government are shifting from the rigid bureaucracies of the industrial era to the more flexible, entrepreneurial, decentralized governments needed today.

In *Preferred Futures for Libraries*, R. Doughtery and C. Hughes wrote that campuses with workstations for all may deeply affect the academic culture and organization. Levine thinks such a development may affect democracy itself.

Technology is making networking and distributing information faster, cheaper, and easier. Networks gets us where we want to go, and we are shifting from timesharing systems to client/server systems as a result of another technological revolution.

State governments are stepping up their uses of technology, and applications are crossing state borders. Some applications are quite innovative. Some are network dependent. The states are examining new technology as they come under budget pressure. Growing numbers of state organizations are facing several important public policy issues involving information: privacy; access; dissemination; fees, costs, charges or pricing, and cost benefits; system failures, increasing costs, political difficulties; and equity.

Technology should support Havel's belief that "the way forward is not in the mere construction of universal systemic solutions ... human uniqueness, human action, and the human spirit must be rehabilitated."

The European Community Information Policy Program

Colin Hensley
Database and Informatics Officer,
Delegation of the Commission of the
European Communities

Is the representative of the 12-nation Economic Community using nine official languages, Colin Hensley spoke of the complexity of the problems faced by the Office of Official Publications, the equivalent of the Government Printing Office. Its production is growing; in 1990 the GOP published 900,000 pages.

Other parts of the European Community, such as the Council and the 23 Directorate Generals, also issue material. To deal with the increasing demand, the Directorate General for Information, Communication, and Culture has worked with the Secretariat General to create the Priority Information Programme (PIP) to develop a structured response to future trends in information demand. PIP has revealed both strengths and weaknesses in information management.

Politically there has been great success in measuring the recognition of the single market in Europe. Internally, awareness of the importance of information and communication has increased, and many of the Directorate Generals have created information units. The effort to produce standardized documents and audio-visual materials has increased.

As for PIP's weaknesses, some perceive the information program to be unfocused. An awareness of aims and priorities can be lacking, and departments have a tendency to compete rather than work together. There is a lack of openness regarding expenditures, which makes a cost/benefit analysis difficult to assess. Lack of coordination among Member State offices also is a problem.

The key to exploiting strengths and overcoming weaknesses is planning: defining the objective, analyzing the audience, selecting media, and defining content. PIP is serving as a blueprint for creating information campaigns and standardizing of the information dissemination by the Directorate Generals. It also highlights the Commission's focus.

Also being developed is the idea of the privileged user. This functions in three ways: defining the types of information supplied, defining the types of users, and defining the terms of supply for each of the users. PIP and the concept of privileged users combine into a powerful tool for informing the public.

Question-and-Answer Session

Moderator Toni Carbo Bearman, Dean of the School of Library and Information Science, University of Pittsburgh, began the Question and Answer session by asking the panelists what they think the greatest problem will be over the next decade.

Kavaliunas said keeping pace with technology. Giammo said he would add defining new relationships with the community, for in some cases government is the unique supplier of information. Levine said he is not worried about keeping pace with technology but he is worried about government using it in such a way that people do not have equity of access. Hensley pointed to the dynamism of information sources and the marketplace with which he has to deal, including the former Union of Soviet Socialist Republics, where no technology exists. He concluded, "Our biggest problem is serving all of the public that needs the information."

A member of the audience asked if the federal government's emphasis on competitiveness is affecting the panelists.

Kavaliunas said no. Giammo said yes and added, "Warfare is no longer guns and tanks but economic strength." Getting to the information is a high priority. Levine said that from the vantage point of the states, how they diffuse information is important. Hensley said that it is a concern for the Economic Community: "The information is the thing that is driving economic competitiveness in Europe."

A member of the audience asked Levine whether local government employees selling data to people doing background checks is a problem. He said that privacy violation is a critical problem, but access to public records is more important than the privacy issues. The speed with which information moves on networks is frightening and makes for a growing problem. The Health, Education, and Welfare statement on this problem remains a good guideline.

Another member of the audience asked where growth will occur, whether users or government will pay.

Kavaliunas predicted the emphasis will be on user fees, and Giammo pointed out that user fees are common now. Levine says the assessment of user fees in the states is mixed, but that people are committed to obtaining certain kinds of information free. Hensley said that information will be made available to people at cost, private enterprise may massage the information and make it available at a profit, and he anticipates that eventually the person who puts the information in will have to pay for it.

Bearman commented that we need to look beyond economic value: "Libraries cost money, but they are priceless."

Part III: Changing Information Infostructure

Presiding—
William W. Ellis
Associate Librarian for Science
Technology Information,
Library of Congress

Moderator William W. Ellis introduced this session citing what he sees as the grand challenges of the information world: coping with the current huge volume of information at a time when automated systems are still daunting; covering the costs of electronic publication during the redistribution of power, authority, and income that seems imminent as electronic publication expands; determining what information has to do with what happens, particularly in democratic societies and in the global scientific community; determining the future of libraries and information services and what their interrelationships will be; and finding better ways to provide the capability to locate materials in federal libraries.

Emerging Roles for Libraries and Information Centers

Thomas J. Galvin
Professor, School of Information Science
and Policy, University of Albany

Warning that he is an academic who has never worked in a federal library and thus will not have to carry out his recommendations, Thomas J. Galvin spoke of the opportunities that hard times bring. To take advantage of opportunities, the library profession needs a clear vision and a single-minded sense of direction.

Galvin suggested that federal librarians begin by defining who they and their organizations are and what they do. They cannot do everything. The common ethic of egalitarianism for users may be subject to reinterpretation. Librarians need to recognize that equality, equity, and parity in services may not be synonyms. Although equalizing access to

information was a major reason for establishing libraries, that does not mean each user must receive the same service. Setting absolute parity of service as a goal is simplistic and self-destructive. Resources will never be adequate. Rationing is inescapable, and the question is how to accomplish it.

Trying to ration on the basis of equity means doing a little bit for everybody but not much of consequence for anybody. A study on what corporate management values in its libraries found that librarians' online searches ranked highest, most companies cannot evaluate their libraries, and few companies consider libraries "mission critical." In order to survive, any library must be "mission critical."

Soon technology will enable users to conduct their own online database searches. It's time for librarians to move from being technological and bibliographical intermediaries to being intellectual intermediaries, to customizing information.

Galvin said he thinks the increasing pressures on federal agencies to be efficient and economical threaten citizen access to federal information. Federal librarians are on the front lines in the battle to preserve and expand this access.

New Linkages for Library Resources

W. David Penniman
President, Council on Library Resources

W. David Penniman said that the Council will be focusing its efforts on human resources, economics, access/processing, and infrastructure.

Infrastructure includes systems, services, and facilities. Among these are high-speed communication networks, software communities, organizations such as FLICC, and the buildings that house libraries. There is a need to address these questions: how electronic networks will change the balance of power and the allocation of resources; how publishers and librarians can work together on changes that benefit both librarians and users; what alternative designs for library facilities can be devised to focus on service rather than structure; how system vendors, telecommunication networks, and bibliographic utilities can work together; what new technologies may change infrastructure.

Penniman presented highlights of a study conducted for the LC Network Advisory Committee and published as "The Impact of Local Shared Automated Library Systems on the Development of a comprehensive Nationwide Bibliographic Database (NBD)." One basic finding of the study was that there is a shift toward fragmentation in many local databases.

Trends in local systems include: using a variety of sources for conversion but only one source for current records, replacing tape loading with electronic transfer, acknowledging the decentralization (and possible declining standards) of cataloging, and connecting to networks.

The report stated that NBD will evolve into a decentralized network composed of local systems, bibliographic utilities will create unique proprietary databases, and the nationwide database will evolve into multiple levels.

He called attention to a new consumer technology, the Sony Data Disc Bookreader with a miniature library costing less than $700, that should be evaluated as a "linkage mechanism" to users. Some other trends include: people will be able to own specialized libraries rather than borrow material; publishers may bypass libraries; technology may do away with some library services; and falling prices may take the trend toward localization and owning rather than sharing materials, including bibliographic databases, to the individual user level.

The potential for individual ownership brought on by lower book prices may have occasioned similar concerns. How libraries address linkages to users is more crucial than how libraries address linkages to each other, though both issues require attention.

Developing Government Information Inventory Locator Systems

Charles R. McClure
Professor, School of Information Studies,
Center for Science and Technology,
Syracuse University

Charles R. McClure reported on a study he is conducting on developing a government-wide information inventory/locator system

(GIILS). The General Services Administration, the National Archives and Records Administration, and the Office of Management and Budget (OMB) are funding the study.

The topic is important. Agencies have many different requirements, purposes, and applications. Although they annually spend millions developing information resources, no comprehensive listing of the systems exists, and much is falling between the cracks.

McClure's study is a follow-up to one completed in July 1990 and reported in *Federal Information Inventory/Locator Systems: From Burden to Benefit* (available through ERIC Clearinghouse as ED 326-312). The July study found that the Federal Information Locator System (FILS) was dysfunctional and demonstrated wide consensus on how GIILS may be established. McClure's current study seeks to identify the existing locator systems in the government, assess the feasibility of incorporating these into GIILS, and develop a machine-readable list of agency locator systems. Minimally such a system would be able to tell users what information is available in the government and where to get it; it would be a pointer system.

The term "locator system" is a complicated one to describe. There are at least four categories of such systems including others that do not fall into a category. The term GIILS means a government-wide, but not centralized, information system that minimally contains citations to, and abstracts of, publicly available U.S. government information, regardless of format, agency, or other source of information.

Research recently funded by the National Academy of Public Administration found 10,000 machine-readable databases in the federal government. Some, such as those in the Environmental Protection Agency, are superb, and McClure's study included case studies to try to identify critical success factors indicating why some locators are excellent.

McClure identified 270 actual or potential locator systems, 55 of which are clearly inventory locator systems. A third of all systems examined did not meet the criteria for being considered a locator system. Of those that met the criteria, 29 percent are bibliographic inventory locators and 22 percent are project reports inventory locators. With 21 systems, the Department of Commerce maintains the greatest number of systems. Health and Human Services ranks second with 11 systems, and Energy, Interior, and NASA each have eight. Many of these databases contain information available nowhere else.

Many initiatives will affect the development of the GIILS. These include the Paperwork Reduction Act, GPO WINDO, the American Technology Preeminence Act of 1991, the High-Performance Computing Act, and revision of OMB A-130. There is a need to do a better job of coordinating policy initiatives, otherwise money will be spread so thin that the job cannot be done effectively. The final report for McClure's 1992 study on locators will be available in the Summer, 1992.

Part IV: Approaches and Opportunities—Discussion and Wrap-Up

Thomas J. Galvin
Professor, School of Information Science and Policy, University of Albany, State University of New York

Thomas J. Galvin fielded questions and comments from the participants before summarizing the day's discussion.

One participant commented on the need to provide public access, and Galvin pointed out that what people want the government to do is not "more or less" but instead to do what it is doing more efficiently. He said that one of the important messages of the day was that information should cease to be viewed as a commodity and be seen as a service.

Another participant commented on who would pay for information and whether access to information would be paid for in the same manner as levied in cable television (without regard to usage) or instead on frequency of requests which would in turn discourage requests. Galvin suggested the question of who pays would be a good topic for the 1993 Forum.

A third participant pointed out that there can be no access without establishing a common vocabulary. People need to know how to search for information. Galvin agreed with this concern; he emphasized that the user needs to know how information is organized, and those responsible for making the information publicly available should collectively agree upon and invent a common language for the user. He quoted Levine, "Technology will become transparent, but

information may become opaque," anticipating that since there is too much to know, information may become muddled or poorly organized.

Galvin summarized the major points regarding money, management, and machinery, his alliterative substitute term for technology. He emphasized Clark's point that information is not free; the question is who pays. Yung and Bass stressed that it is a mistake to view government information as a revenue source.

Galvin raised another question: Is all government information the same and should pricing be the same? Some publications are mandated, and some are optional. Some of the other key points made by speakers and included in Galvin's summary are listed below:

- In terms of management, Bass stressed the importance of developing a broad-based access constituency.
- Yung said the states no longer look to the federal government to take the lead and said models for information resource management may come from the states.
- Kavaliunas pointed out the pitfalls of picking transient technologies.
- Kapor noted that most computer users occasionally become frustrated because computers are difficult to use.
- Kahn discussed the diversity of outputs.
- Galvin said that librarians would act as intellectual intermediaries and he added another "M", marketing, because the topic had received considerable attention. Rose referred to the concept of one-stop shopping for information.
- Kapor called for interchangeability of software components to make electronic publishing and dissemination of information possible.
- Kavaliunas said the Census Bureau is diversifying its product line to make its information available to smaller institutions and individuals.
- Finally, Hensley noted that international markets provide potential markets for government information.

The Future of Government Information: Money, Management, and Technology

---

Papers and Remarks

Congressional Policy Initiatives Regarding Federal Availability of Government Information and the Role of the Joint Committee on Printing

The Honorable Charlie Rose (D-NC)
Chairman, Committee on House Administration;
Chairman, Joint Committee on Printing
U.S. House of Representatives

I am very glad to discuss congressional policy initiatives regarding the availability of federal government information and the role of the Joint Committee on Printing (JCP) regarding those initiatives. Furthermore, it seems to me that the theme of this Forum is most timely and highly important. The future of government information is, indeed, highly dependent upon how we who serve in government effectively balance and utilize money, management, and technology.

The initiatives I will be discussing respond to the problems and needs of our time. They stand, however, in a long tradition of congressional efforts in upgrading, improving, and refining Federal law and policy concerning the availability of government information. Let me begin by briefly commenting on that history.

The Beginnings of Official Printing and Publication

The importance of official printing and publication by the new Federal Government was stressed during the Constitutional Convention. Delegate James Wilson of Pennsylvania, during a discussion of a proposal to allow each congressional chamber a discretion as to the parts of its journal that would be published, told his colleagues: "The people have the right to know what their Agents are doing or have done, and it should not be in the option of the Legislature to conceal their proceedings." It was subsequently decided (Article 1, Section 5) that each House of Congress "shall keep a Journal of its Proceedings, and from time to publish the same, excepting such Parts as may in their Judgment require Secrecy."

Later, at the Virginia Convention on the new Constitution, James Madison and George Mason stressed the importance of publishing all receipts and expenditures of public money under the new government. Responding to these reviews, the new Federal Congress quickly provided for the printing and distribution of both the laws and treaties, followed by regular publication of the House and Senate journals a few years later and, by 1846, the routine publication of all bills, congressional reports, and special documents-the last including important Executive Branch literature.

The same 1846 law authorizing routine publication of congressional materials also created the Joint Committee on Printing to administer congressional printing needs as well as watch over those activities. By the time of the Joint Committee's creation, the beginnings of the depository library system had been mandated, and with the mandating of the Government Printing Office (GPO) in 1860, the Joint Committee became the "board of directors" of the federal printing establishment. Moreover, the Joint Committee was a very early practitioner of congressional oversight, keen on maintaining efficient and economical government printing serving the information needs of both the federal government and the citizenry. It was committees like the Joint Committee that political scientist, and later President, Woodrow Wilson had in mind when, in his 1885 analysis of Congress, *Congressional Government*, he commented: "The informing function of Congress should be preferred even to its legislative function."

The Joint Committee continues to play its watchdog role and still serves as the board of directors for GPO. I became chairman of the Joint Committee in 1991 for the 102nd Congress, succeeding Senator Wendell H. Ford, who is now the vice chairman of the panel.

Government Information Should Remain a Public Asset

A major concern that I have, which was reflected in my first chaired hearing by the Joint Committee on April 25, 1991, is that government information remain

a public asset. This means that government information should remain equal available to all. Technological and policy barriers to access must be virtually eliminated. Individually citizens and information corporations shall receive the same government information to use as each wishes.

The advent of current and future technologies will dramatically change the role the library community plays in the dissemination of the public's information. Information must be made to work for our people so a more enlightened and educated work force can better compete in a world economy. Innovation will be the buzzword, and small-scale networks that serve specific markets and needs will be but one distributing mechanism for the information flow from the federal government that you will help manage.

JCP Initiatives

Recently, the Joint Committee has undertaken several initiatives, very much in keeping with this Forum's "money, management, and technology" theme, and each, in its own way, has contributed to enhancing the availability of federal government information.

With regard to money, or, more correctly, the effecting of savings and the elimination of waste in the federal government information system, the Joint Committee has brought into general use recycled printing and writing papers throughout the federal government and initiated and enforced new federal paper specifications that are increasingly the standards for most state and local governments. As Senator Ford recently noted, the federal government, in less than two years, has become the biggest single recycled-paper buyer in the country. "In the first twelve months of our bulk paper purchases," he has reported, "the Government Printing Office paid on average 12 percent less for the recycled paper it purchased than it had in the previous 12 months for virgin fiber papers." This means savings for information products produced in paper formats, for GPO, and for the entire federal establishment.

In the area of management, the Joint Committee has obtained from the General Accounting Office (GAO) the first complete audit of GPO in eight years, which revealed various income and expenses problems. GPO recommended an annual financial audit in the future.

We have also received from GAO the first comprehensive evaluation of GPO management, which, among other problems, revealed deficiencies in record keeping, policy direction, workforce and equipment usage, and high rates of paper spoilage, with the result that efforts are underway to produce a long-term plan, long sought by the Joint Committee, for the future of GPO. A GPO report worth examining is *GPO/2001: Vision for a New Millennium.*

In addition, inspector general offices in a number of Executive Branch agencies, at the request of the Joint Committee, investigated and made recommendations on cost-effectiveness, efficiency, and economy measures involving agency printing. In its oversight capacity, the Joint Committee is or will be pursuing the implementation of these various recommendations to effect improved public printing in the federal government.

Turning to technology, GPO, at the direction of the Joint Committee, has completed five pilot projects for the electronic distribution of government information to depository libraries. These include the census on CD-ROM; the toxic release inventory of the Environmental Protection Agency on CD-ROM; the Congressional Record, as of 1985, on CD-ROM; the Economic Bulletin Board online to a selected 120 libraries; and the abstracts of the Department of Energy technical reports online to 18 selected libraries.

Final evaluations of these projects have not as yet been completed by the Government Printing Office/ General Accounting Office, but the prospects are interesting, if not exciting. Preliminary data shows that the users are happy with the idea of having the final Congressional Record on CD but would prefer a more friendly software retrieval package.

Returning to the April 25, 1991, oversight hearing of the Joint Committee, it is evident that concern continues to exist that a great deal of information gathered at public expense is not reaching the depository library system. This occurs for a number of reasons, including poor management of publishing programs by federal departments and agencies, the trend toward computerization of information, and simple budgetary constraints. The Joint Committee has had one look at this situation and probably will make a further examination during the present Congress.

H.R. 2772: GPO WINDO Legislation

Seeking enhancing of the role of GPO as a federal government information disseminator and information access agent, I have introduced H.R. 2772, the GPO Wide Information Network for Data Online Act. The bill has been referred to the Committee on House Administration, which I also chair. It seeks to establish in GPO a single point of online public access to a wide range of federal data bases containing public information stored electronically. While public hearings on this measure are being planned to obtain a broad range of views, I will also be receiving expert views from the

Joint Committee staff regarding this policy innovation. I hope that many members of the federal library community will have an opportunity to examine this proposal and share your views about it by writing to me in care of the Joint Committee or the Committee on House Administration.

It is not my intention to harm the private sector information industry. In fact, just the opposite; the proposed WINDO bill will encourage true value-added activity in the private sector. However, the need for more and better systems for the public to access its information is fundamental to the concepts of a free society. In this day of high-speed microcomputers and the decreasing cost of memory, the rationale for limited access dissipates.

Finally, what of the future? You know that congressional committees, such as the ones I chair, are problem solvers with little opportunity to look very far into the decades ahead. For that kind of vision and foresight, we turn to practitioners and planners in a variety of institutions and organizations. In that regard, the views and advice of this committee, the Federal Library and Information Center Committee, are welcomed and respected by me.

You and I share a common objective. Thomas Jefferson put it this way long ago: "I know no safe depository of the ultimate powers of the society but the people themselves; and if we think them not enlightened enough to exercise their control with a wholesome discretion, the remedy is not to take it from them, but to inform their discretion by education." The ready availability of government information is, I believe you will agree, vital to that education.

Notes

1. Max Farrand, ed. *The records of the Federal Convention of 1787*. Vol.2. New Haven, Yale University Press, 1937, p. 260.
2. *Constitution of the United States*, Article 1. Section 5.
3. Max Farrand, ed. *The records of the Federal Convention of 1787*. Vol.3. New Haven, Yale University Press, 1937, pp. 311, 326.
4. See, for example, 1 Stat. 68, 443, 519, and 724; 2 Stat. 302; and 3 Stat. 145, 439, and 576.
5. 3 Stat. 140
6. 9 Stat. 113
7. See 3 Stat. 140; 11 Stat. 253.
8. 12 Stat. 117.
9. Woodrow Wilson. *Congressional Government*. Cleveland, Meridian Books, 1956, p. 198.
10. U.S. Congress. Joint Committee on Printing. *Government Information as a Public Asset*. Hearing, 102nd Congress, 1st session. April 25, 1991. Washington, GPO, 1991.
11. U.S. Congress. Joint Committee on Printing. *Activities of the Joint Committee on Printing, 101st Congress: Report by Senator Wendell H. Ford, Chairman*. S. Prt. 102-24, 102nd Congress, 1st session. Washington, GPO, 1991.
12. Ibid., p. 3.
13. Letter of September 28, 1820, to William Charles Jarvis. In Andrew A. Lipscomb and Albert Ellery Bergh, eds. *The Writings of Thomas Jefferson*. Vol. 15. Washington, Thomas Jefferson Memorial Association, 1904, p. 278.

A Vision of the Future

Mitchell Kapor
President, The Electronic Frontier Foundation

We are early on in the Information Age, and in the future the frontier-like conditions under which we all labor at our terminals are likely to be radically different in certain ways from what they are today. For instance, to be first-class citizens of cyberspace, it will not be necessary for us to have all the pioneer skills, whether these be butter churning in the little house on the prairie or editing our own autoexec files. If those are the requirements, then cyberspace is going to be a pretty thinly populated, hostile environment.

I think the vision many of us share is understanding how we get from where we are today to a future in which the benefits of computer-based communications and information technology can be made widely available to everyone in this society. At a minimum, that would seem to require making the technology more usable.

I know it is a fact, little known and not widely discussed, that most people who use a personal computer on a regular basis sometimes are seized by the impulse to lift up the entire system and heave it out the window. I know I have that feeling.

Defining Cyberspace

So what is all this talk about cyberspace? Is it an exercise in literary imagination, or is there really something to it that we should take seriously in an attempt to formulate new policies and new technologies?

When I am asked to give a definition of cyberspace, I am tempted to say it is the place that two people are when they're talking to each other on the telephone. The shared experience in being on the phone with somebody is absolutely not the same as physical presence, but it is not a totally abstract experience. It has a number of the qualities generally associated with the physical state, in a very attenuated fashion, because, of course, when you're on the telephone, all you're hearing is a voice.

And in fact, cyberspace is experienced by the tens of millions of people today who use electronic mail, bulletin board systems, Internet, or online information services. In fact, most people live their lives inside the ASCII prison.

That is going to change, and the experience will change dramatically. I am going to talk about technology a little bit later on, but I would like to spend a few moments just exploring with you how the metaphor of cyberspace may be able to shed some light on information policy issues.

In cyberspace, information, in my opinion, is the new property; it is the equivalent of the tangible valuable asset that characterizes physical space. In the history of this country, there have been many battles over the control of physical states. Expansion into the West characterized by such phases as the battles between ranchers and farmers, the operations of the railroad companies in the building of a transcontinental network, and control of physical space, has been the major theme in development.

Exercising Control Over Electronic Space

I would argue that we are beginning to see a number of arenas of significant control over electronic space, and not limited to any one area. Let me give you an example of that from my own experience. Many of the current intellectual property battles in software over copyrights and patents are over who gets ownership rights of the ideas that are embodied in the pieces of software.

It is pretty clear that the vested interests are trying to use existing copyrights and have the framework to attempt to exert significant amounts of control over the use of ideas that are originated by individuals.

Paradoxically, perhaps, it is the practitioners, the software designers themselves, who favor the most liberal interpretation of much of the property law to encourage borrowing and incremental competition of new products and old products, but that is a story for another day.

I tend to think of government information as being the new comet, the new body of valuable material that we as citizens all hold collectively. In that case, there is a large issue about what is the best resource management policy for that body of knowledge in the same sense that one might think about what is the most valuable resource management policy for the huge amount of land that is under federal law.

My view is that we have to make sure that we do not carry the metaphor too far. I want to draw your attention to a very crucial distinction between cyberspace and physical space. In physical space, if a party has the usage of that thing, it is to the exclusion, in general, of other parties. My own piece of land, what that really means is my right to exclude you from it. And there is something about physical property that lends itself to this sort of natural exclusivity.

But quite the opposite is the case with information, because when information is in a digital form, it is trivially easy to duplicate it, distribute it, and manipulate it in a variety of fashions. That means party B can use the same volume of information that A has without in any way interfering with A's usage of the information—because you just make another copy. You can make an infinite number of copies.

The Perils of Awarding Exclusivity

It would be nice if you could make an infinite number of [illegible], valuable waterfront real estate, but physical space does not work that way. Cyberspace does. So we need to make sure that we do not fall into the trap of awarding exclusivity on it as we do in land management, where we give exclusive contracts, for instance, for exploiting mining rights.

We do not need to do that here. We can follow a different path, to the extent that we are encouraging the private sector in a particular case, as we should, to develop, to add value to the public information resources. It should clearly be done on a very open and nonexclusive basis because there is no technological reason to do otherwise and no policy reason that I can think of. In fact, this is a case where efficient operation of the private sector is ultimately going to do a lot of good for a lot of people, if there are opportunities to get out this information.

At the same time, it is pretty clear that in the same sense that we do not have the private sector run the national park system (at least we have not done that yet), we do not expect it to run the national information system. There is a notion that the government properly plays a role in certain activities where there may be a market failure or insufficient incentive for private industry to do the job. It is clear that there is a vast amount of information in the health sector, environment, and law enforcement where government has to take the lead in making this information widely available. Otherwise it will not happen.

I think we are trying to formulate an elegant misuse strategy, and I do not think I am saying anything terribly daring here. In fact, what I understand about the fundamental calculations of information lends itself very well to the notion of trying to find some sort of intelligent strategy and avoiding either extreme position: of government attempting to publish everything and control the publication and, on the other hand, of letting the private sector handle all of that. I will leave it to the legislative and policy experts to actually work out what in practice are extremely complicated and challenging tactics and logistics for achieving that.

What I want to turn my attention to is the question of why the Information Age has not arrived already, or why software is so hard to use. We could have the world's best policies, but the bottom-line test is whether individuals who use the information can get their hands on it readily when they need to.

The Responsibilities of the Computer Industry

I think this is, in some sense, a technological problem for which people in the computer industry need to take on the responsibility. Computers are still enormously difficult to use. We have made tremendous strides in the past 15 years in making more powerful machines, making them cheaper, and making them smaller—in being able to move the bits around from point A to point B with increasing rapidity—but we have not seen a corresponding improvement in the high-level tools used for storing, indexing, and retrieving information. We're still really in the infancy of that era.

Let me give what I hope is a comforting message, which is that the print media and books did not reach maturity any time soon after Gutenberg. Gutenberg's output was really a manuscript in a new form, printed with movable type. It was the same size and weight as those copied by hand. In fact, books were so valuable that they were chained to the shelves in the library for fear that somebody would walk out with one of them. They were printed in type very difficult to read. They had none of the appurtenances that we usually associate with books. For instance, they had no page numbers. That was because, originally, the book was simply a

manuscript reproduced with the new printing technology.

In the course of approximately a century, a number of innovations were made. Many of them were pulled together by a Venetian printer, Aldus Manutius. He was responsible for developing the first portable books, about six inches by nine inches, that could fit inside the saddle bag and be transported from one place to another. He also developed an italic form that was much more readable; reprinted many of the classic works in Latin, Greek, and the Romance languages; and, in general, modernized the book to the point where it became the basis of a mass medium. This happened more than a century after Gutenberg began printing books.

At that point, the book became capable of serving as a basis for the rise of the individual and Western society's development of democracy.

The technology began with Gutenberg, but it went through its evolution as we are going through that evolution today. And this is my message.

We are very, very early on in it. Some of us, probably, will live to see it in its maturity. For instance, no two online databases seem to work the same. They have different interfaces, they have different database structures, they reside on different operating systems. Each time people go to build a new system for disseminating electronic information, they're starting from scratch, and they're causing their users to start from scratch.

This is pre-industrial. The notion that made possible the manufacturing of tangible goods was that you could build objects out of standard, interchangeable parts, that it was not necessary to custom craft each of the thousands of parts required each time you wanted to make a new artifact.

Regrettably, we are still in the pre industrial era in software. We do not know how to build software out of components. Therefore we will handmill thousands of software procedures in code for each new project that we make, which means that no two products come out to be quite the same.

The Case for Standardization

When I go to a museum to see collections of ancient artifacts from the Greco-Roman period, I am struck by the fact that no two of them are the same. There was a lack of standardization; some are smaller, some are larger, some are flatter, some are bumpier.

Software is like that today, and that imposes a powerful burden both on the developers and on the user community. On the developers because it is extremely arduous and difficult and expensive to make software of any kind. On the users because it creates extremely high hurdles to effective usage. There is little transferability of learning. For instance, if you manage to master System A, learning how to use CompuServe, it does not help you at all if you want to use Prodigy. I bet if you learn some DIALOG, it does not help you much when you're on LEXIS.

I think these problems are transient, but they are very real today. The expense of developing online systems has to drop. It has to be possible to take raw information that accumulates in the various agencies and arms of the government and make it more widely available. That will only happen if it is easier to manufacture the information from its raw stage into the stage that people find useful. So we need to have better tools, and we need to have better standards.

As we develop policies at the federal level for networking and for bringing more libraries online, all of which I support fully, we cannot just be thinking about building bigger, fatter, faster bit pipes for moving information from point A to point B. We need to begin to increase our focus on questions of what will be the higher level standards by which this information will be organized.

I will give you one example. If there were widely or universally accepted standards for full-text indexing, then when it came time to take a new database and index it in order to let it be more readily searchable, the process would not require a custom piece of software development. You would be able to use an off-the-shelf component. You should never take for granted that you have to develop your own. Not even the CIA and NSA build their own regimens any more. Nobody does that. What is available serves the purpose whether it is a Lotus, Microsoft or anybody's product. The government does not even build its own computers. In the Gulf war, the armed forces bought thousands of laptops; and if these broke, they just bought others.

We need to be able to build and buy software components for indexing, for retrieval, for billing, for accounting, for cataloging, for all of the functional components that make electronic publishing and dissemination of information possible. We need to have such interchangeability that we would no more think about building our own system than end users and would think of building their own word processing programs.

That is not going to happen overnight, and it is not going to come about by the government decreeing standards in a vacuum. It is likely to arrive through public/private partnership, with the private sector playing an increasingly good role in investing its capital

and in developing more services. But I think there is an extraordinarily important government role to be played in leading and coordinating the effort.

The Need For Infrastructure

The Internet is a wonderful example of how government leadership can lead the way for lots and lots of private sector investment.

My hope is that, as we move forward on such efforts as the Internet, we consider these elements of standard and higher level functions for indexing, retrieval, cataloging, and distribution. We need to build interoperable systems and off-the-shelf components so that the agencies that are charged with making available and distributing this information have a richer set of tools.

The bottom line of what I am saying is that as long as everybody has to churn his or her own butter, there is not going to be a lot of butter. But if we can put it in the infrastructure, everything from dairy farms to the highways that connect them, then we wind up with the supermarket in which there is a very wide and diverse selection of food.

If we build the right infrastructure—not just moving this from point A to point B but the full range of what I have talked about—we are going to be able to provide a diversity of information to the widest possible constituencies with the most convenience.

That is my vision, and my hope.

Keeping Access To Government-Produced Information Open: The Fallacy of Information as a Government Profit Center

Gerald E. Yung
Vice President, Mead Data Central, Inc.

As a representative of Mead Data Central, the provider of the LEXIS® and NEXIS® electronic information services, I appreciate the opportunity to make you aware of a new and disturbing trend that threatens to restrict both the amount of information available to the public and the number of sources for that information.

If this trend continues, our hope of bringing the benefits of electronic information to an ever-increasing percentage of the public will be frustrated, and the spectacular growth of the American information industry, which today dominates the worldwide marketplace and is one of the few American industries to produce a substantial balance of trade surplus, will slow and our worldwide market share will decline.

Information as a Revenue Source

The problem is the growing tendency of government agencies to treat information as a source of revenue.

That governments are looking to information as a revenue source should not be surprising. For example, more than half of the states not only have a deficit but also two or more years of declining revenues. Times are tough, and information is an easy target. This is especially true given that many government agencies exist primarily to collect, maintain, and disseminate certain types of information. Of course, the insidious part is that often the government starts with a monopoly on that information—there is no other place to obtain it.

What if the Government Sells Information?

But the purpose of the government in passing laws, deciding cases, or requiring administrative agency filings is not just to take the action and then store away the resulting information in dark and dusty files never to be seen again. It goes beyond that. Is the real purpose not to make the public aware, so that citizens may know the laws and regulations they are expected to follow?

We are told that the Romans posted new laws on the lamp posts and trees for all to see. We still do that in some ways—consider the posted speed limit signs along the highway. The point is that the government has an interest in informing its citizens.

But what happens if the government begins to sell that information, with the price bargained for the result of using tests like need to know, commercial use, or value? Three things will happen, all of them bad.

- The cost of information will certainly increase.
- The government will begin treating the information as proprietary by placing restrictions on its use.
- Redistribution of the information will become less attractive with the result that the government's monopoly will strengthen.

In each case, public access to information will be diminished.

Let's talk about some specifics.

Here in Washington legislation is now pending that would impose a royalty on the use of Federal Maritime Commission tariff information. The basic concept is that redistributes of that information must keep track of its use by the public and pay the government 35 cents for each minute of subsequent use. This bill was sponsored by US Representative Robert W. Davis of Michigan and failed to pass last year as H.R. 534 but has recently resurfaced as part of a shipbuilding bill, H.R. 2056.

Canada has long had the concept of Crown copyright, but it has rarely been enforced. However, last year a Treasury Department regulation specifically

called for royalties to be paid on use of court decisions and further noted that permission to copy them should be required. Traditionally this has been more a problem in the provincial governments than at Canada's federal level.

Examples in the States

Our experience in the United States is similar in that the most extreme examples come from the 50 states. Let me give you some examples.

Colorado: In Colorado, the state passed legislation declaring the Colorado Revised Statutes to be the sole property of the state and directed that they be copyrighted. The legislation went on to make it illegal to copy the statutes without the payment of an appropriate fee and declared that only an officially sanctioned copy could be used as evidence in Colorado courts.

New York: Another legislative branch example comes from New York. There the Revisor's office set up an online legislative tracking system in competition with a similar system run by a private sector company named Legi-Tech. When Legi-Tech attempted to subscribe to the state system, admittedly to update its own information, the state refused the request. It took the Federal Court of Appeals to force the state to allow its private sector "competitor" to have access to this basic and necessary information - the status of bills in the legislature. Legi-Tech v. Keiper 766 F.2d 728 (1985).

New Jersey: In the Techniscan case, the Supreme Court of New Jersey overturned an agency which priced information according to its intended end use. Specifically, the court prohibited charging a premium to a commercial reseller of information. The court said that the only question to be considered by the agency is whether the requested information fell under the state's right-to-know law. Techniscan v. Passaic 113 N.J. 233 (1988).

Some of the worst examples come from secretary of state offices. In New Jersey, the secretary of state charges the public for call-in requests for information from their filings, e.g., whether corporations are registered in the state, the names of officers and directors, who can accept service of process in case you want to sue the company. When you call, they ask for an account number. If you do not have one, you should have a credit card number. The state may argue that this charge merely defrays the cost of providing the service, but if you ask for a copy of the database to put on your own computer to provide this information to others, New Jersey will not only charge you for a copy of the tape but will also require you to pay them $7 every time one of your end users looks at any of the records. We have declined to carry their information on our service to protest this policy.

Rocket science is not needed to conclude that in such situations the fees being charged exceed copying cost. You will not be surprised to learn that to protect these high prices they typically attempt to require you to agree you will not resell copies of the full file information in bulk.

Delaware: Delaware went about it a little differently, but the result for the public is no better. Their secretary of state refused to make the file tape available and instead allows only a one-record-at-a-time search through a gateway. To make matters worse, they will not even allow you to connect to them directly. Instead, you must go through one of the dozen or so state-appointed registered agents who are permitted direct electronic communication with the office. Not surprisingly, this is expensive. Separate and cumbersome arrangements must be negotiated, fees must be paid, gateway software must be developed, and the end result is less than ideal.

At this point you have to take a moment to reflect on the government's purpose in collecting and creating this type of information. While I am not happy with either situation, it bothers me much more to see a regulatory agency make a profit on disclosure of required filings than it does to see the same thing happen with agency-written software. Some state agencies, e.g., in Florida, already have such a business and H.R. 191 would allow federal agencies to take the first step by copyrighting certain classes of software. At the extreme ends of the continuum, I really could not care less about governments copyrighting their state song, flag, or travel videos, but the proposition that a government can or should in any way restrict access to the very law itself is outrageous.

Ohio: I should add that it is not always a desire to be a revenue producer that sends agencies down the path of restricting access to information. In a recent Ohio case, a doctoral student in operations research at Case Western Reserve requested a copy of a computer tape containing records of police dispatch information for the city of Cleveland. The stated purpose was to analyze the effectiveness of the city's deployment of its officers. Apparently the city did not wish to have its effectiveness studied, because it refused to copy the tape and instead offered only to make the information available in printed form, which was not already in existence and had to be created at a considerably greater cost compared to merely copying the tape. The requester objected, claiming such a printed version would have stood eight to ten feet tall and, given the large amount of data, would have required expensive and time-consuming rekeying to be of any real use. In

a unanimous opinion, the Supreme Court of Ohio ordered the city to produce the tape. In explaining its decision, the court used an example of an agency that had two sets of documents on a topic, one neatly organized in a file cabinet and the other in a random stack on the floor. The court said it would not permit the agency to discharge its responsibility to make its records available by offering the less useful version. The court also noted that the concept of a public record relates to the information itself, rather than the medium on which it resides.

There can be no question that access to government-produced information is essential in a democratic society. On the federal side, the law is relatively well-developed and supportive of this right, with few exceptions. See, for example, the Freedom of Information Act 5 U.S.C.S. 552 (1992) and the prohibition on copyright in government-produced works 17 U.S.C.S. 105 (1992). Actual agency practice is generally close to the law, especially when compared to the practice in the states.

In addition to the recent cases and statutes I have discussed, there are both federal and state case decisions going all the way back to the 19th century that are consistent in their holdings that access to public records must be encouraged, not impeded. See, for example, *Wheaton v. Peters*, 33 U.S. (8 Pet.) 591 1834 and *Howell v. Miller*, 91 F. 129 (6th Cir. 1898).

Today there are ongoing attempts to refine and express these principles. On the federal side the two key vehicles are OMB A-130 and the Paperwork Reduction Act, S.1044 and S.1139. The state activity has been much more fragmented, but recently the National Conference of State Legislators, the National Governors' Association, and the Council of State Governments have set up a joint task force to consolidate and make available policy information to its constituents.

Information Policy

Finally, I would draw your attention to the extensive body of policy studies written on this subject. Probably the best and most comprehensive is the 1986 report of the Committee on Government Operations. I am particularly proud of the Information Industry Association's White Paper, which was produced by a committee I chair. It sets forth six key principles for guidance and provides a summary of the underlying legal framework for information law in the United States.

Our long tradition of open access to government information and our rich diversity of government, public interest, and private sector sources for that information have served us well and are the envy of people all over the world. To give up this tradition in the name of profit would be a poor bargain indeed. Do not let it happen.

Census Data Case Study

John Kavaliunas
Chief, User Training Branch, Data User Services Division, U.S. Bureau of the Census

The 1990 census information is available not only in traditional/standard media such as printed reports, microfiche and computer tape, but also on compact disc or CD-ROM and online through CENDATA. This means that much census information, heretofore accessible only to those large institutions with access to a mainframe computer, is now available in offices, schools, and libraries.

For a yearly subscription fee and telephone charges, or for as little as $500 for a CD-ROM reader and $150 for a disc, small-scale users can now tap into the large decennial data base.

Many new players—advocacy groups, students, local churches, and small businesses—are now using the census information. The 1990 census represents the "democratization of data" according to our director, Dr. Barbara Everitt Bryant.

I want to discuss some of the activities leading up to this democratic data availability and some thoughts on our data dissemination policy.

Democratization of Data

Democratization of data started several decades ago. The Census Bureau has long been a leader in information technology, not only in the processing of information but also in its distribution as well.

Back in 1890, Herman Hollerith, who later founded IBM, was concerned with getting out the results of the 1890 census and came up with a radical idea: the punch card. The 1950 census was processed on UNIVAC 1, the world's first computer, now on display in the Smithsonian. After the 1960 census, the Census Bureau realized that not only could it tabulate data on a computer but also it could release information in computerized format. Several files were released on an experimental basis from the 1960 census. Interestingly enough, we no longer have the technology to access the data in their original format. Users had their choice of: "binary, binary coded/decimal, XS-3 tapes" and metal tapes. But the computer tape as a dissemination medium was an afterthought to the printed reports.

For the 1970 census, the Census Bureau began thinking in terms of users and their requirements. From the 1970 *Users' Guide*: "Whenever people who produce data are separate from the people who use the data, a rational system for the delivery of data is required." The Census Bureau data must be delivered "in an understandable form, with minimum delay, and without excess cost." Besides the printed reports, the Bureau designed an intricate series of files known as "counts"—one through six. The entire census was contained on 2,054 reels of 7-channel, 556-CPI (characters per inch) tape. (Today, Summary Tape File 4 A alone will take more than 2,000 reels of tape at more than ten times the amount of information per inch.) During the 1970s we filled about 2,500 individual orders and copied about 10,000 reels of tape. Users tended to be federal agencies, large state agencies, universities, and some businesses. We involved libraries, too, by starting the Summary Tape Information Library Program through which we furnished interested libraries with free copies of the tape documentation and other publications.

The Census Bureau also encouraged the use of the computer tapes and helped spawn an entire new industry. A number of private companies came into being for the purpose of processing census computer tapes for other companies and organizations who lacked the time, experience, hardware, or inclination to process the tapes themselves. Some data files were also made available on microfilm.

Responding to Increased Demand

By the time of the 1980 census, there was greater access to computers, but coupled with that was an even

greater demand for data—for federal programs, for marketing, and for a host of other decisions. The mix of data users continued to grow: social service providers, neighborhood leaders, and community organizations. Since the technology had not changed over the decade, the Census Bureau looked to enhance the dissemination system. The state data center program, currently with about 1,500 organizations that serve as local data disseminators, came into being. Computer tape processing and the flow of this information to local affiliates are two key elements in this program.

Microfiche: To make machine-readable information available to a greater audience, the Census Bureau also released selected computer tape files on microfiche. Private companies continued to process machine-readable information, but now had added their own enhancements to the data; online systems, intercensal estimates at the tract level, date maps, and psychodemographics were now at the disposal of companies that were no longer satisfied with the basic numbers.

Floppy Diskettes and CD-ROM: The 1980s saw the development of personal computers. There was a demand for census data on floppy diskettes, but huge census data files could not fit on floppy diskettes. About 1985, the Census Bureau began experimenting with a new technology that seemed promising both in its capacity to store large amounts of data and in its potential accessibility through a personal computer. This was the new compact disc read-only-memory, a cousin of the CD that was to revolutionize the recording industry. We authored two experimental disks—the first Federal agency to do so—and made Test Disk 1 and Test Disk 2 available to a variety of users, including libraries. The rest is data democratization history. This past January, sales of CD-ROMs surpassed those of computer tapes, something we had predicted would happen-but not until 1994. CD-ROM seems well entrenched as a major distribution medium at the Census Bureau.

Data Online: Another perhaps lesser-known development of the 1990 census dissemination program is the availability of data online. CENDATA, our online service, is carried by DIALOG and CompuServ and offers selected tables from key summary tape files. DIALOG even offers these tables at the census tract level. While online presents its own set of access problems, it does offer an alternative to persons or organizations that do not have tape processing capabilities. It is also the fastest way to obtain the data.

Increasing Public Access Is Overriding Goal: We can characterize the Census Bureau's dissemination activities and accomplishments over the past three decades in terms of one principal goal: increasing public access to as much data as possible. Four factors come into play:

Relying on and even fostering multiple distribution:

- points, intermediaries, and dissemination multipliers;
- Providing more and more data in an ever increasing product mix to meet the needs of different users;
- Assisting users in accessing data in machine-readable products; and
- Keeping pace or anticipating changes in technology.

Let us look briefly at each one of these.

Multiple Distribution Points and Multipliers: While we do maintain a factory outlet store, Customer Services in the Data User Services Division, the Census Bureau is in many respects similar to a wholesaler. We produce in bulk and rely on intermediaries to refine and repackage the product to make it more useful for the public. These include state data centers, business and industry data centers, regional offices, private companies, and Federal depository libraries and census depository libraries. As a result, the public has a choice of products, service levels, price, and source. Innovations in 1990 census data dissemination systems have focused on schools and national minority organizations.

Provision of More and More Data: Changes in technology have enabled us to provide ever greater amounts of information. But data needs and accessing capabilities do vary. We have attempted to provide users with as many product options as possible: tape, tape cartridge, CD-ROM, microfiche, online, and printed reports. But given the technology, not all data products are appropriate for all media or even fit on all media.

For example, Summary Tape File 1A requires 82 high-density computer tapes. You can get the same information on 17 compact discs or 20,000 microfiche (that is about 4 million page images). The same information would require 25,500 floppy diskettes or 4.5 million pages. Users who do not need all the information can use the corresponding printed report series that requires about 9,900 pages, not counting the appendices. Still another option is CENDATA online, which contains selected tables from STF 1A.

Basic Access: Early on, the Census Bureau recognized that users needed assistance in accessing machine-readable products. In 1970 we set the standards and conventions for census machine-readable products. By 1990, our products followed standards set by the Federal Government and the computer industry. In 1970, a handful of expensive software

programs were available to access census tape files on a mainframe computer. In 1992, a variety of inexpensive and mid-range PC software programs that can work with census CD-ROMs are on the market.

Instead of inventing a totally new, all-encompassing system for accessing 1990 census data, we have provided basic access software right on the disc itself for the most common data requests. We have encouraged the more sophisticated users to utilize other available computer programs. "GO" software, the software on the discs, enables users to choose the piece of geography they want and most of the data items on the file. It is like reading a book. The "GO" software will enable you to turn the page, but if you want to do any calculations of the data, you'll need to buy a calculator-or in this case some other software program. "GO" software requires minimal support and documentation and does not compete with existing software packages.

Changing Technology: As we begin preparing for the 2000 census, anticipating user needs and keeping abreast of technological changes, we anticipate that the mix of products from the 2000 census will no doubt draw on new technology. We plan to continue to stay abreast of emerging technological advancements and take advantage of those that seem especially promising as a way of providing more data to more users. Some of the more promising technologies on the horizon include: mini-PCs; new optical media, including write-once CD-ROMs and digital audio tapes (DAT); new approaches to online data access; and higher density computer tapes and cartridges. These changes in dissemination technology obviously will have an impact on the access points, such as libraries. What do you need to be considering as we move closer to 21st-century data delivery?

The new technology presents new opportunities and some challenges. Will the library of tomorrow be more than just a collection of electronic books? Will your users expect not only data access but also assistance in data analysis, and map production? For example, the TIGER/Line files are more than a data file and more than just a map. They provide a computer-readable description of census geographic areas. While the possibilities of using TIGER are seemingly endless—from drawing data maps to routing vehicles—its use in a library setting must be well thought out beforehand. You will have to define the level of service you are willing and able to provide to the public, not just with TIGER/Line and similar files but with electronic media in general.

Constant Evaluation Necessary

You will have to constantly evaluate the needs of your users or patrons. You need to look at hardware requirements, storage capacity, and appropriate software, all of which have to be budgeted for. You also need to look at the training needs of the library staff not only for accessing the new electronic media but also for using some of the software available.

I ask members of the Federal Library community to let us know of your concerns and needs. We probably will be unable to meet all of them or design a product that does everything you want, but in communication and working together, we can make information more readily available to the public—a goal we all share.

The Patent and Trademark Office Example: Managing Massive Amounts of Data and Delivering It to the Public

Thomas Giammo
Assistant Commissioner for Information Systems, U.S. Patent and Trademark Office

The overall mission goals of the United States Patent and Trademark Office (PTO) derive from Article 1, Section 8 of the U.S. Constitution which states, "The Congress shall have the power...to promote the progress of science and the useful arts, by securing for limited times to...inventors exclusive right to their... discoveries".

The principal factor (in information dissemination) that contributes directly and significantly to the achievement of this mission is the degree to which the relevant sectors of the society have access to information necessary to:

- foster the competent preparation of patent applications and trademark registrations;
- avoid infringing on patents and trademarks in the application of existing technology; and
- understand the current state of the art as a basis for developing new technology.

As an integral part of its mission, PTO is responsible for making patent and trademark information available to all the relevant sectors of the society. As an important part of its efforts in this area, PTO is committed to making relevant information resources generally available in the United States in the most useful of forms and at the lowest feasible price. This will include not only its own internal information resources but also those of other Patent Offices throughout the world.

Focus of Existing Dissemination Efforts

The Office currently accomplishes its dissemination mission through the following:

Public Search Rooms. The PTO operates search facilities in Arlington, Virginia, where the public can perform research and obtain information on specific patents, trademarks and assignments. Copies of patents and trademark and records showing ownership and rights to patents and registered marks is available in paper and on microfilm. The public also has recourse to automated search tools (for a fee) to assist in searching these files

Patent and Trademark Depository Libraries (PTDLs). Currently, 70 libraries throughout the United States maintain copies of U.S. patents and trademarks and assist the public in using these materials. They also provide copies of patents, prepared from the microfilm or paper collections at the libraries.

These libraries also offer supplemental references, such as copies of the *Official Gazettes* and documentation on the U.S. classification system, and provide technical staff assistance in the use of these references.

Database Sales. The PTO currently makes available machine-readable copies (on magnetic tape) of its patent and trademark data bases to customers who pay a fee based on the marginal cost of preparing and distributing the tapes. The 16 customers who purchase patent text and image files are primarily large-scale retailers of on-line data base services who provide this data to thousands of customers; the firms who purchase trademark data have hundreds of users who subscribe to their services.

CD-ROM Products in Production Status. The office currently support production of several CD-ROM discs. Some issues, for example those containing restricted data obtained under international agreements, are only available in the Public Search Room and in the Patent and Trademark Depository Libraries (PTDLs), while several are available by subscription to the public.

These CD-ROM products include:

- CASSIS products, which provide enhanced capabilities for locating patents of interest through the U.S. patent classification scheme;

- ASIST, which contains patent information files (e.g., Patentee/Assignee file, and attorneys and agents registered to practice before the U.S. PTO) and other search tools;
- TRADEMARKS, now available in the PTDLs, which contains the text of nearly 800,000 active and pending trademarks; and
- discs containing English-language abstracts of Japanese patents.

Building on Our Current Base. As an important goal of its dissemination program, PTO will strive to have the relevant information resources made available in the most useful of forms and at the lowest feasible price. These efforts will include not only its own internal information resources but also those of other Patent Office throughout the world. PTO is also committed to working toward standardization and compatibility among various patent related information products and services available in the marketplace to enhance their overall usefulness to both the intellectual property and research development communities.

Impact of Automation on Information Dissemination.

The automation of the patent and trademark examination processes provides several possibilities for more timely and convenient dissemination of patent and trademark data.

The availability of digitized images of both patents and trademarks will make the following products and services possible:

- Remote facsimile of images on demand;
- Overnight downloading of subset of our patent image files to research and development centers throughout the country;
- Production of a wide range of CD-ROM products from our electronic data bases;
- Direct remote access to our Full Text Search capability, first from Patent Depository Libraries, later from any location; and
- Direct remote access, perhaps on a degraded response basis, to our Classified Search and Image Retrieval capability.

Advances in Technology. The development of CD-ROM technology has introduced another media for providing patent and trademark data (along with the functional capabilities for performing searches and retrieving subsets of the data) to the small law office, research center, and libraries. The PTO has received a very favorable response to its CASSIS discs, which helps users of the classification system to locate patents of interest, and plans to make available discs containing newly issued patents and text and registration information of active trademarks and applications.

The usefulness of CD-ROM products is limited, however, by the current availability and cost of equipment needed to efficiently use data bases spanning more than a single CD-ROM disc, and by the need for high quality workstations and printers to display and print high quality copies of patent images. For this reason we envision that CD-ROM products will be an alternative to, but not a replacement for, on-line public access to PTO data.

What's Coming in the Near Future.

The PTO is actively involved in the development of the following products. (Additional information is provided in the product summary table at the end of this paper.)

CD-ROM Product Development

Japanese Abstracts. In the next few months the PTO will issue the final disc in the set of English language abstracts of Japanese patents (1980-1989). Because of the restrictions contained in international data exchange agreements, this data will only be available in the Public Search Room and in the PTDLs.

New Patent Issue. We have produced a demonstration disc containing patent images useful for both limited searching and high quality printing of patents. This disc has been made available to the PTDLs and to interested members of the AIPLA for evaluation. If response is favorable, we intend to issue a solicitation for the private sector to produce this discs (or supply an existing product) in December, 1991.

Trademark Data. The PTO has received a favorable evaluation of the usefulness of a disc containing bibliographic information for the entire file of currently active U.S. registered trademarks, and will issue an official updated version on a regular basis beginning in October, 1991. We are evaluating the need to sponsor production of a disc containing trademark images as well as bibliographic information; if the evaluation is positive, we will issue a solicitation to acquire such a product in early 1992.

Electronic Bulletin Board Services. The PTO now provides, on a pilot basis, a bulletin board containing information on newly issued patents appearing in the *Official Gazette*. There is some limited capability for searching against the file, and users are able to download the full text of the patent for storage or printing. Over a six month period we will evaluate the usefulness of this service to the public, the ability of the PTO to provide the data in the timeframe needed by the users, and the potential for cost recovery. A decision whether

to continue this service on a production basis will be made in early 1992.

Access to Automated Patent System Facilities. PTO currently provides access to its examiner full-text search system in the Public Search Room, and has extended this service to several PTDLs. Plans call for installing image retrieval workstations on a trail basis in the search room and in the several PTDLs, and for the full automation of the Public Search Room. Additional services will be possible after all the patent data is loaded to on-line storage, including remote facsimile of patent images on demand and direct remote access to the examiner search systems.

In general, PTO believes that the private sector offers significant advantages in the packaging and distribution of information products and services over the PTO and it is to expected that the PTO will work through these private sector firms by facilitating their access to PTO's internal information resources and purchasing, where appropriate, finished products and services for PTO's own internal use.

Calculating Base Use. The PTO calculates the base use to develop fees for information dissemination products. It is PTO's policy to recover the marginal costs associated with producing information products for dissemination. In all cases, PTO should offer its information products and services at a price that is sufficient to recover the marginal costs, in the aggregate, of its information dissemination activities and that is also approximately proportional to the marginal cost of the specific information product or service. We must develop a methodology for including all relevant cost, including those related to the definitions of requirements for and the development of demonstration discs of possible products.

Meeting Production Schedules. PTO is able to meet desired production schedules for data products while ensuring the quality and accuracy of the data. This point is critical for products which are not readily updated, e.g., products distributed on CD-ROM.

Current Electronic Patent Information Products

Product	Contents	Note
CASSIS/BIB	Includes for Utility patents issued from 1969 to the present, and for other patent documents issued from '977 to the present: year of issue, state/country of inventor's residence, assignee at time of issue, title, status (withdrawn, or expired for failure to pay maintenance fees), current classifications, and abstracts for up to three of the most recent years.	CASSIS/BIB replaces most of the functionality of CASSIS/On-line and adds considerable functionality that was not available in the on-line systems. CASIS/BIB is intended to provide enough searchable text (patent abstracts, patent titles, and the Manual of Classification) to enable a user to determine which classification(s) to search for the subject art.
CASSIA/CLSF Bimonthly	Current classification information for all Utility, Design, Plant, Reissue, and X-numbered patents, as well as Defensive Publication and Statutory Invention Registrations, issued from 1790 to the present (over 5 million documents).	Indexing of classification information has been optimized for rapid retrieval. The disc is intended as a classified index to a numerical patent collection. Used primarily to produce a list of all patents in one or more subclasses in reverse numerical order.
ASIST Trimonthly	Patentee-Assignee File shows assignments at time of issue for utility patents 1969+ and for other types of patents 1977+; inventors for 1975+. Reassignment File shows changes in assignment subsequent to issue recorded 1980+ for patents issued 1975+. Attorney Roster File, Index to the U.S. Patent Classification, IPC-USPC Concordance, Manual of Classification, Manual of Patent Examining Procedure, Classification Definitions, and the Classification Orders Index are also on the disc.	The index to the U.S. Patent Classification was searchable in CASSIS/On-line. The other files were not previously searchable by the public outside the PTO.

Planned Electronic Patent Information Products

Products	Contents	Note
PTObbs Approximately daily (24hrs?) access, weekly update	An electronic bulletin board which will provide text only of patents on the day of issue, as well as notices from the Official Gazette well in advance of publication.	The index will provide patent titles, abstracts, inventors, assignees, and classifications, with the full text in compressed down-loadable files. OG notices will be browsable online.
APS Pilot Project	Fourtect PTDLs will have APS text terminals available for their use, either directly by the public or through an intermediary, at the discretion of each PTDL.	Training was provided to the PTDL representatives at the 1991 PTDL Conference. No charge during pilot term, $40/hr. in production.
Patent Assignments Trimonthly update	Assignments ar of issue date or subsequent to issue of all U.S. patents, as recorded at the PTO	Assignment data will be moved from the ASIST disc to this disc and considerably augmented.
U.S. Patent Weekly issue	Facsimile images of the pages of each patent, searchable by patent number, includes the full text in ASCII only the patent number and current classifications searchable.	Intended to replace microfilm and paper currently provide to exchange partners and PTDL's format for downloading, with
Trilateral First Page	All text in English (translated where necessary) from first page with facsimile images of any accompanying figures or formulas. Will include US, EP, and WO documents. Japanese documents may or may not be included.	All text would be searchable, with images displayed in a separate window.
Selected Technologies	Facsimile images of patents related to a particular technology (e.g., biotechnology), regardless of classification, along with ASCII text for patent literature.	A pilot project to test the feasibility of providing regularly updated technology-specific discs may be undertaken searching. May included non-

Planned Trademark Electronic Information Products

Product	Contents	Note
TRADEMARKS Bimonthly	Active trademark registrations	This will evolve from the current pilot disc to regular production and eventually include cropped images of active marks, at which time production will be contracted out
TRADEMARK Updates Weekly	Pending trademark application and trademarks which have become active or which have changed since the last issue of TRADEMARKS	May be published on magnetic disks or CD-ROM, depending on costs and turn-around time.
TRADEMARKS Assignments Bimonthly with weekly updates	Changes in assignment of active marks	In-house production
TRADEMARKS Tools Trimonthly	TMEP, Federal Rules of Practice, Trademark Act of 1946, G&S Classification Manual, Design Search Code Manual, TTAB Procedures Manual	In-house production
TRADEMARKS Registrations Backfile: as a disc fills Current: as a disc fills or annual, which ever is sooner	Full-page scanned image for all registrations, active or not; indexed by registration number only, with cumulative index on each disc	Requires scanning pages of bound volumes for backfile; roughly fifty discs to start, with one to three per year thereafter; contract out backfile, with subsequent production in-house
TRAM QC Dumps Quarterly	Contents to be specified as needed for DBA and quality control	In-house production

State Government Innovations in Managing Electronic Information

Ed Levine
Senior Policy Coordinator for Information Technology, Office of Financial Management, State of Washington

I am not a librarian, or an archivist, or a lawyer, or a technician, and I am definitely not speaking on behalf of the state of Washington. I am a bureaucrat attempting to use information and information technology to serve our citizens.

Money, management, technology—these are exceptionally appropriate topics to state and local governments. We are broke, technology is pervasive and difficult, our managers are struggling.

I want to begin with competing visions of where we are, discuss emerging technology and state practice in using it, and then discuss some of the emerging policy issues.

First, the context. Vaclev Havel, writing in the March 1, 1992, *New York Times*, said, "We all know civilization is in danger. The large paradox at the moment is that man, a great collector of information, is well aware of this, yet is absolutely incapable of dealing with the danger. Traditional science, with its usual coolness, can describe the different ways we might destroy ourselves, but it cannot offer us truly effective and practicable instruction on how to avert them. There is too much to know; the information is muddled or poorly organized; these processes can no longer be fully grasped and understood, let alone contained or halted. ... We are looking for an objective way out of the crisis of objectivism. Everything would suggest that this is not the way to go. ... What is needed is something different, something larger. Man's attitude toward the world must be radically changed. We have to abandon the arrogant belief that the world is merely a puzzle to be solved, a machine with instructions for use waiting to be discovered, a body of information to be fed into a computer in the hope that, sooner or later, it will spit out a universal solution. We must try hard to understand than to explain."

As F. W. Lancaster wrote in *The Paperless Society Revisited*, "The fact that I have written about an electronic future does **not** necessarily mean I endorse such a future or that I enthusiastically look forward to it."

David Osborne in an article, "Government That Means Business," that was in the same day's *New York Times* as Havel's essay, wrote that "a historic change [is] now coursing through all levels of American government: a shift from the rigid, wasteful, centralized bureaucracies of the industrial era to the more flexible, entrepreneurial, decentralized governments needed to succeed in today's world. ... Without articulating it in so many words, the American people are demanding governments that are less bureaucratic and more entrepreneurial. During the industrial era, public institutions were set up much like large businesses: large centralized bureaucracies, with elaborate rules and regulations and hierarchical chains of command. But in today's world of economic flux, fierce global competition, and sophisticated information and communication technologies, such institutions are dinosaurs."

Information technology, the computers, networks, software, data, and expert systems are transforming state governments caught between the increasing demands for efficient and self-supporting governments and the fundamental roles of disseminating and sharing information. State governments are struggling to use information technology to be efficient and preserve the vital and fundamental elements of informational democracy. Access to information increasingly means access through technology to information. For example, in the context of higher education, in *Preferred Futures for Libraries*: "Although the issues confronting higher education are pressing and profound, few have the potential to more deeply affect the academic culture and organization than the journey towards universal workstation access."

The main competing visions of technology simply reflect the underlying reality that state governments, like all of societal organizations, have become totally dependent upon computers, computer systems, networks, and vast qualities of information to perform their responsibilities. From collecting taxes to issuing drivers licenses, redistricting voters, designing bridges, or managing jails, states use information technology. Because much of the information that is created, collected, analyzed, stored, and communicated directly impacts on the governed and informs the citizens of the actions of their governments, the implications of state governments use of information are profound. The reason is that, although the states have not been on the leading edge of creating or using technology, they have not been exempted from the impacts of new technology.

This technology is making the dissemination of information faster, cheaper (through personal computers and workstations), easier, and networked and distributed.

A recent article in *Business Week* noted, "The network is the system." It is access to networks that gets state government managers where we want to go. The February 1992 issue of *CASE Trends* said, "There is a fundamental shift underway from timesharing systems represented by a central host computer fronted by a dumb terminal, to client/server systems, where processing power is distributed across network computers. ... The move to client/server architectures is as unstoppable and is as profound as the transition from batch systems to timesharing systems."

We are about to go through another technological revolution as the technology moves to the desktop.

The National Association of State Information Resource Executives (NASIRE), in a most recent survey of its members, shows that state governments are increasing their uses of technology and new applications are crossing state boundaries.

The Gartner Group, a private consulting firm, suggests that organizations' information technology capabilities fall into three categories: A (whiz bang), B (using well), and C (newcomers). State governments are not monolithic, but I would suggest that, in general, states are in the B- category.

It is difficult to find a substitute area of government where computer systems are not being developed or used—welfare systems, criminal justice, growth management, education are some substantive areas where new systems are being built. Although many of these are not ground breaking from a technological perspective, many of them are organizationally innovative.

The states are examining new technology as a result of finding themselves under pressure from fiscal reductions. States are broke. They must be efficient; and as they increase efficiency they must catch up in the appraisal and archiving of information.

An indicator of the extent to which states are recognizing that information systems must be managed, and that there are fundamental policy issues involved in the management of information, is that the number of state agencies explicitly devoted to information policy is growing. More than 100 are listed in the 1991 "Council of State Government Report: Directory of State Government Policy Organizations." These organizations are facing several important public policy issues: information, privacy, access, and dissemination; information fees, costs, charges or pricing, and cost benefits; system failures, increasing system costs, political difficulties; and information equity.

States will adopt and adapt to technology. For example, in California terminals are available twenty-four hours to the public in shopping centers where the public can use a personal computer networked to the state's mainframes to make inquiries about the availability of services or order a birth certificate using a credit card to make payment. In the city of Santa Monica, there is online access to city government information and citizens can engage in public debate on electronic bulletin boards. Electronic debates about homelessness actually included homeless people who used a public terminal in the library to make their comments. That shows we can use this technology.

The technology can support Havel's belief that "the way forward is not in the mere construction of universal systemic solutions ... human uniqueness, human action, and the human spirit must be rehabilitated."

The European Community Information Policy: Establishing Information Priorities

Colin Hensley
Database and Informatics Officer,
Delegation of the Commission of the
European Communities

I certainly find myself in an interesting and privileged position here today, being the only representative of a non-American institution. I thank you for giving me the opportunity to address you.

The European Community is an economic grouping of twelve nations working towards the development of a single frontier-free market—a market of 325 million people, most of which, unfortunately for us, want to know exactly what is going on.

Let me first explain briefly the structure of this Community.

Structure of the Community

The community is comprised of a number of institutions: the Council, the Parliament, the Court of Justice, the Economic and Social Committee, the European Investment Bank, the Court of Auditors, and the Commission.

Each of these institutions has a specific role to play in the day-to-day functioning of the Community, whether it be drafting legislation, approving legislation, managing monies, or mediating in disputes. The common role they all have is that of information provider. They are all accountable to the public they serve and, therefore, produce information for public consumption in a number of different forms. These include print, microfiche, online, magnetic tape, floppy disk, and CD-ROM.

This sounds very familiar, but when you consider that this information has to equally serve 12 countries using nine official languages, you begin to see the potential complexity of the problems, and the need for a structured methodology.

The European Community has a publishing office called, unsurprisingly, the office of Official Publications, or the OP. It is very similar to the U.S. Government Printing Office.

As such, the OP is responsible for the production and sale of publications produced by all of the institutions, the promotion of databases, the management of stocks--all the usual tasks a publisher undertakes. The number of pages produced by the OP during the last six years, of course, has followed an upward trend, with 1990 seeing approximately 900,000 pages published, some 200,000 more than in 1985.

This relatively simple scenario, however, is complicated by the fact that, even with this centralized publishing office, all of the different institutions also produce their own information independently. So the Parliament, the Council, the Commission's Secretariat General, and each of the 23 Directorate Generals issue their own documents, too. I work for the Commission, so obviously, that is what I am most familiar with. In the light of the continued increase in demand for EC information, the Directorate General for Information, Communication and Culture, set about creating a program that allows the establishment of information priorities. This is called the Priority Information Program, or PIP.

The Priority Information Program

The most important thing to remember about the PIP is that it is a dynamic program, based around a number of sound principles. At this time, the main focus is, of course, the single market and 1992. PIP was originally defined in 1987, and the PIP Coordination Committee was established as the instrument of policy and program coordination. As such, PIP functions as a body that predicts the future trends in information demand so that budgetary and administrative arrangements can be made.

Over the past few years, as valuable experience was gained, the role of PIP has developed. Each year the program defines certain priorities of content and

organization that reflect the progress of the Commission's own thinking on its work program. This takes into account a number of public opinion surveys and the political reporting of the Commission offices and the other Commission services.

There are, of course, many lessons to be learned, and the program has revealed both strengths and weaknesses in information management.

Strengths

Let us look very briefly at some of the strengths, and in this case, let us get into the nitty-gritty points of the program as it now stands.

I have broken these down into two areas: political and technical. Politically, we have seen great success in increasing the recognition of the single market in Europe. We have seen widespread use of the logos and symbols of the EC, in particular the flag. You will, without a doubt, see it at the Olympics. And very importantly, we have seen a very positive public opinion when it comes to the objectives of political, economic, and monetary union.

Technically, and here I really mean internally, we have significantly enhanced the awareness in the Commission of the importance of information and communication. This has resulted in the creation of information units in many of the Directorate Generals. These have allowed for a clearer definition of the objectives and targets.

Furthermore, we have improved the sectorial coordination. So the different Directorate Generals are working together in common areas.

The publications policy has been tightened up. This means there is more effort to produce standardized documents and audio-visual materials with a real identity to them.

Weaknesses

Of course, whenever you go out to identify the strengths, you also meet the weaknesses of any program.

There is a perception that the information program is somewhat incoherent and remote or unfocused. This is, in part, due to the size of the market being addressed and the disparate nature of the issues being dealt with, nevertheless this is a real problem.

There is, generally, a low awareness of the aims and priorities of the program, with a corresponding overemphasis on application of techniques.

And finally, a very common problem is the tendency for individual departments to adopt almost a corporate approach to information work, seeing other departments as competitors. This prevents them from pulling together on major issues.

On the technical side, when I say joint responsibility, I refer mainly to the financing of information measures, and a lack of openness about expenditure on information. It is always difficult to assess the cost/benefit of an information action if you don't have a real estimate of the cost of it.

Target-oriented planning is about getting the right material to the right people. Without making this a priority, it is impossible to function effectively.

Lastly, lack of coordination is a perpetual problem. When you are trying to disseminate information to a wide audience, you have to try to make the best use of the resources available to you. In many cases the person on the spot will have the best understanding of the nuances of the issue. In our case it is essential to maintain contact with our member state offices, for example.

Management and Coordination

So the basic method that will be used to address the weaknesses of the program, and begin to exploit the strengths, can be summed up in one word: planning.

It sounds pretty straightforward, but let me elaborate a little:

- Define objective;
- Analyze audience;
- Select media; and
- Define content.

It is essential to define the real objective for each plan for information dissemination. This must also include one factor that is all too often forgotten, the timing of the project. A publication is useless if the information in it is out of date. Similarly the value of a database is seriously reduced if more current information is available elsewhere.

Secondly, it's an all too common fault not to assess the requirements of the audience you are addressing. I suspect that it would have been more than a nuisance if I made my whole presentation in Dutch. This problem is typified in our delegation in Washington. The standard material we have for distribution was produced for a European audience. It is not really suitable for use in American high schools or libraries. Consequently, we have had to make up special information packs for high schools or libraries.

Thirdly, we must select the media. These days, the choice of media available to us is growing: print, online, CD-ROM, floppy disk, video, interactive video. It seems that a new way to distribute information is developed almost every month. When I recently decided to run a campaign highlighting the availability

of the EC database in the United States, I considered the usual flyers and brochures, but in the end I decided to use the technology I was highlighting. I created a demo disk. That's not to say I ignored the regular methods. I combined the disk with an ad campaign in a database magazine.

Finally, we must consider the content of the piece. This will, to some extent, be a reflection of points relating to the audience and the media used. But it is also important to avoid using jargon, and to ensure that the meaning is the same in each of the languages we are using. We also want to maintain a consistency throughout out information.

Other Methods

We are using the Priority Information Program (PIP) as a blueprint for the creation of information campaigns. It also is used to standardize the actual content of information put out by the different Directorate Generals. It highlights the focus that the Commission wants, including Europe 1992 and the single market, economic and social cohesion, and external relations, be it the United States or EFTA or with the Commonwealth of Independent States and the other former-eastern-bloc nations.

The other tool that is being developed is the idea of the privileged user. This has three functions. First, it defines the types of information we supply. These include basic information, public service information, and public documents. Secondly, it defines the type of information user, such as cooperative, mutual, or relay. Finally, it determines the terms of supply for each of the users. This defines the extent to which each group of users is either given material free or has to pay for it and aims to serve each audience with the type of media with which they are most comfortable.

That very briefly sums up the main focus of out Priority Information Program. When the PIP is combined with the concept of privileged users, you start to have a powerful tool for informing the public.

Emerging Roles For Libraries And Information Centers

Thomas J. Galvin
Professor, School of Information Science and Policy, University at Albany

My assignment is to kick off a consideration of some of the important ways in which the environment for federal libraries and information centers may be changing.

I think that I ought to begin with a two-part consumer advisory warning. First, I have never worked in a federal library, but, as that great sage of modern times, Charlie Brown, observes, "the world is full of people who are anxious to act in an advisory capacity." I am one of them.

And in that profound observation of Charlie Brown's also lies the kernel of the second part of my truth-in-packaging advisory. I am an academic. So you will need to consider what I have to say in the light of Dick DeGennaro's observation that "the most dramatic predictions about the future of books, libraries and information technology, tend to be made by men of thought rather than men of action--by writers, professors and committees that do not have to implement their ideas in the marketplace and take personal responsibility for the results." DeGennaro writes, "Nothing is impossible to the man who does not have to do it." I am "the man who does not have to do it."

I think the best contribution that I can make is to try to set the stage for David Penniman and Chuck McClure, who will be talking about some specific kinds of changes, and about the potential opportunities for federal libraries that may come with those changes. I would like to try to sketch out very quickly a context that you may find useful in responding both to their ideas and to some of the other interesting kinds of opportunities that we've been hearing about.

The Quintessential Oxymoron

It may strike you that my use of the word "opportunities" in the same phrase with "federal libraries" is either the quintessential oxymoron or else the best evidence that I have indeed completely lost touch with reality. In these hard economic times, it is more common to describe the options that seem to be open to people in government in the language of Woody Allen. He observes that today "more than at any other time in history, mankind faces a crossroads. One path leads to despair and utter hopelessness. The other to total extinction... Let us pray we have the wisdom to choose correctly."

In short, the times do not seem propitious for looking ahead with anticipation. Rather they seem to be more appropriate for looking back with nostalgia. More for trying "to hold on to as much of the past as possible—or even to retrieve lost aspects of it—rather than" for confronting "the future directly". For avoiding "change, since most possible changes are thought to be unfavorable or even disastrous." Does that pretty much capture the way things look to you for 1993?

If it does, then take heart. Because those words were written almost 20 years ago, in 1973, to describe the last great down cycle in American higher education. So, given the fact that we survived the 1970s there is surely reason to hope that we will make it through the 1990s too. Probably a bit bloody, but, I hope, with our heads still unbowed.

The fact is that it is no particular challenge for an agency to be successful in good times. It is figuring out how to succeed when most other folks are failing that separates the really big winners from the also-ones. Granted the aptness of Paul Valery's observation that "the trouble with our times is that the future is not what it used to be," it is in these times that having a clear vision for the future, and having a single-minded sense of direction about how to get there, become truly essential for people in our business.

I do not have any simple or foolproof formula for

how federal libraries can succeed in these tough times. But I do have some suggestions about ways to look at new opportunities and at organizational change. I want to talk a little bit about three things: first, about doing a better job of defining just who you are, and just what it is you and your organizations do; second, a word about technology, productivity, and accountability; and finally, an exhortation concerning public access to government information.

Defining Core Tasks

Last summer I read a splendid book by James Q. Wilson called *Bureaucracy: What Government Agencies Do and Why They Do it.* Wilson talks a lot about defining one's mission. "The principal challenge facing public managers," Wilson writes, "is to understand the importance of carefully defining the core tasks of the organization..." Peter Drucker, in a recent book on the management of non-profit organizations, makes a similar point when he asserts that "the belief that every institution can do everything is just not true."

What does that have to do with libraries and information centers? Quite a lot, I think. It has to do with how we establish goals and norms for client services, with how we segment (or rather how we do not segment) our clientele, with how we make decisions and choices about whether and how we respond to new service needs and opportunities.

As librarians, you and I have been carefully schooled in a common ethic. We have been taught to regard the library as the quintessential egalitarian institution. Our proudest boast is that all persons stand equal before the circulation desk!

That is truly a noble sentiment, but we pay a great price as a profession for some of the ways in which we choose to interpret egalitarianism. I submit, for example, that it is really important to recognize two things. First, that equality, equity, and parity in library and information services are not necessarily synonyms. But we sometimes behave as if they all meant the same thing. I submit that one major reason that libraries were established in democracies was to more nearly equalize the opportunity for access to information. Libraries provided a way to get at books for those who did not have the money to own books. I further submit that, by defining equal access as meaning every potential user must receive absolutely identical service, that we should not offer a service to some clients unless we are absolutely confident that we already have the resources to offer the identical service to every client. To set absolute parity in service as both our goal and our *raison d'etre* is at once simplistic and self-destructive.

The fact is that there will never be enough of any governmental resource to respond to everybody's needs. To deny the need to ration government service is not to live in the real world. The critical issue is not whether information services will have to be rationed. The critical issue is: how shall library and information services be rationed? On the basis of equity, on the basis of need, or some combination of the two? And, who will make that decision?

The Equity Issue

When we allocate library services exclusively on the basis of equity, the consequences most often are of the good news-bad news variety. The good news is that the library does a little something for everybody. But the bad news is that it doesn't do much that turns out to be of any great consequence for anybody. The idea is not original with me. I commend to you a recent study by Lawrence Prusak and Jim Matarazzo, published by the Special Libraries Association in 1990, as *Valuing Corporate Libraries: A Survey of Senior Managers.* The study was also summarized in *Library Journal,* September 15, 1990.

Prusak and Matarazzo wanted to find out what it is that corporate management values most about corporate libraries. They report three principal findings. First, they found that "on-line searches provided by librarians are considered the most valuable" service that the library offers. Second, "most companies have no methods or processes in place to evaluate the effectiveness, efficiency, or productivity of what librarians do." And third, while "everyone appears to 'like' libraries and librarians...few firms think of them as 'mission critical'."

In case you missed it, I have just subtly segued over to the second of my three topics: technology, productivity, and accountability. And in case Prusak and Matarazzo's message is too subtle for you, let me restate it in the baldest terms. The message to libraries and librarians is: get mission critical or get ready to get dead! Make your library indispensable to those people in your agency who will decide which parts of the agency are going to have to be sacrificed so that the rest can survive.

Don't make the mistake of believing that Prusak and Matarazzo's findings only apply to the for-profit sector. If we've learned anything about managing effectively in the public sector, it is that what is decisive is not the difference between for-profits and not-for-profits it is the similarities that are decisive. Peter Drucker, as always, says it best: "For each non-profit institution, the executive who leads effectively must first answer the question, 'How is performance in this institution to be defined?'"

Just a quick sidebar on the technology issue as it relates to accountability. Not just libraries but virtually all types of service organizations have been singularly unsuccessful so far in demonstrating that capital investment in information technology really does pay off in increased productivity. It is a problem whether we define increased productivity in quantitative terms (doing more with fewer people) or in qualitative terms (providing a higher level of service to clients). That is partly because some of us got a little carried away and oversold the technology to our bosses. And it is also because the availability of technology just happened, for better and for worse, to coincide with the budget crunch at all levels of government. So, for most libraries, the best we can say is that computers and telecommunications have helped us to stay even—to continue to offer traditional services, rather than to offer new and expanded and better services.

Our major success in using the technology to make libraries "mission critical," say Prusak and Matarazzo, has been in mediating on-line database searches. If that is even half true, then libraries will be in real trouble when the technology becomes so user friendly that end users can do their own searches.

Libraries as Intellectual Intermediaries

I think that now is the time for librarians to redefine their role vis-a-vis clients—to move from being merely technological and bibliographical intermediaries to becoming intellectual intermediaries, to customizing information. As information technology continues to expand the boundaries of the known bibliographic universe, your clients today are in more and more urgent need of your skills, not just in locating information, but in analyzing, evaluating, recombining and repackaging information. Those are the tasks that match my mental job description for an intellectual intermediary.

My final point. We are meeting today in a structure named for James Madison, whom we honor for his advocacy of citizen access to government information. We have designated Madison's birthday as Freedom of Information Day.

Efficiency and Economy as Threat to Access

I think that the increasing pressures on federal agencies to achieve greater efficiency and economy continue to represent a grave threat to citizen access to federal government information. As federal librarians, you are the front-line foot soldiers and the shock troops in the ongoing battle both to preserve and to expand the public availability of federal government information.

Open government remains at risk from both our enemies and, sometimes, even from our well-intentioned friends. Privatization and contracting out were featured in a March 1 article in the *New York Times Magazine* by David Osborne, the apostle of "reinventing government." Osborne seems to do a good job of stating the problem when he observes that "voters don't want more government...But they don't want less government either." They want **better** government, and less expensive government...governments that are less bureaucratic and more entrepreneurial." All of that sounds like the problem all right. But Osborne's proposed solution—more emphasis by government on earning money rather than spending money—is at once simplistic and potentially sinister when and if it gets applied to the information functions of government. So please do remain both vigilant and mindful of Elizabeth Drew's admonition that "there is no step to reduce the deficit that does not take something away from someone." People like me are counting on people like you to make sure that the something that gets taken away from us is not our right to freedom of information and to government in the sunshine.

New Linkages for Library Resources

W. David Penniman
President, Council on Library Resources

The Council on Library Resources (CLR) has a strong history of influencing the infrastructure of library operations. It has played a major role in the evolution of bibliographic utilities as well as in efforts to bring about linkages between those utilities. The Council has recently formulated four major program areas for focusing its efforts in the future. These are human resources, economics, access/processing, and infrastructure.

Defining Infrastructure

The umbrella term "infrastructure" includes the systems, services, and facilities that are drawn upon to help libraries and other information services operate more efficiently and effectively. Included in infrastructure are high speed communication networks, bibliographic utilities, regional networks, software and hardware vendor communities, publishers, and, of course, organizations such as FLICC. Also included as a major component of infrastructure is the current array of physical structures that are viewed as essential to information service operation—e.g., the buildings that house libraries as we now conceive of them. Here are some questions that should be addressed in this category.

- How will emerging, as well as in-place, electronic networks modify the balance of power as well as the allocation of resources among different information service segments?
- How can publishers and libraries work together via experiments that demonstrate processes of change that are beneficial to both segments as well as to the end users?
- What alternative designs for library facilities can demonstrate a focus on service rather than structure and illustrate that form can follow function when the function is clearly understood and articulated?
- How can system vendors, telecommunication networks, and bibliographic utilities work together when large central operations (as well as artificially defined cooperative networks) and local systems seem to be on a competitive collision course? Is there a long-term strategy that makes sense for all and serves our users well?
- What new technologies may change the infrastructure that supports and links libraries? NREN is the current focus of attention, but I will show you one later that could also create a new "linkage" to end users as well as between libraries.

While the concept of infrastructure is extremely broad, I believe that a few well-chosen projects can begin to move us toward a more rational environment in which both information producers and information consumers are served well by libraries.

Report on the CLR Study

Now I'd like to turn to a specific study conducted with CLR funding for the Network Advisory Committee (NAC). This report, by Lou Wetherbee, is titled "The Impact of Local Shared Automated Library Systems on the Development of a Comprehensive Nationwide Bibliographic Database" and has been issued as NAC Planning Paper #21.

Highlights of NAC Planning Paper #21.

Development of a nationwide bibliographic database (NBD) is evolving, or fragmenting, into hundreds of local databases. Such a shift has profound implications for development of a comprehensive nationwide database: "...a major effect of local automation on the national database is the distribution of that database to far more nodes than network planners

have historically conceived. These nodes will not be effectively interconnected for some period in the future, resulting in an increasingly heterogeneous set of bibliographic databases residing at local, state and national levels. Standards will bend to local needs; redundancy will be the rule; and overlapping coverage will be commonplace," (p.13).

As a result, there will be no single database of record. While the Library of Congress and the utilities will provide input, they will not be able to control the contents or scope of NBD.

Reports of Current Trends in Local Systems.

Local systems will use a variety of sources for conversion, but one major source for current records. More efficient uploading and downloading are needed. Electronic transfer will replace tape loading. External files will be added (often purchased from the commercial sector). Locally produced non-bibliographic files will be added. Shared local systems will be strongest when they have a state mandate and unity of purpose. Heterogeneous shared systems (multiple library types with different purposes) will have more difficulty. Decentralization of cataloging (the result of moving catalog maintenance to a local system database) could degrade standards for cataloging quality. Some of the larger local systems (especially in research libraries) may begin to function as bibliographic utilities. Local systems will connect to Internet and to other networks; we see this trend already.

Reports of Nationwide Bibliographic Database and Utilities. NBD will evolve into a completely decentralized and distributed network composed of local systems. OCLC/LC will continue to play key roles in (1) setting quality standards and (2) creating/storing key bibliographic components of the NBD. Gradual erosion of completeness/currency of records will occur at the national level. OCLC will become more dominant as it absorbs RLIN libraries.

Bibliographic utilities will seek to distinguish their services via specialization and creation of unique proprietary databases. "The nationwide database will evolve into multiple levels. The national level, best represented by OCLC, will contain bibliographic records, summary holdings data, preservation information, and other content files such as indexes and abstracts. At the local level, there will be a proliferation of overlapping 'local' databases which may duplicate much of the information held at the national level as well as retain more complete holdings and location data and unique local files. 'Local' level databases may be municipal, county, regional campus or larger networks. Hierarchies will be less important since networks can horizontally connect quite easily without the need for extensive administrative structure. This can be seen now in the emerging connections between local OPACs on the Internet," (p.39). I urge you to study this report and determine its implications for your specific organizations.

Bypassing Traditional Libraries

Finally, I would like to turn to another set of forces (beyond emerging local systems and the linkage of these in new and imaginative ways). I would like to look at one of the most recent technologies entering the market at the consumer level and suggest that it be evaluated carefully as a new "linkage" mechanism to end users---one that bypasses traditional libraries altogether.

If I told you that I had in my briefcase a complete encyclopedia, selected reference books, plus 425 of the classics and most famous works of literature and that this "library" would cost less than $700, you would probably find it hard to visualize. In fact, I do have such a collection (or library). It is the new Sony Data Disc Bookreader and associated discs. Why do I mention this to people concerned with the sharing of resources and linkages? I mention it because we are already seeing forces that have changed the motivations or mechanisms for sharing at the larger institutional level across libraries. I believe we now will see a change in the personal ability to own specialized, targeted "libraries" rather than borrow material for many of the people who make use of our libraries, at a time when libraries are concerned with owning vs. borrowing among themselves.

I will not take the time to predict all of the changes that this or other new systems might render, but let me suggest some possibilities.

Information delivery could bypass libraries because the publisher can provide better "finding tools" at a price that is competitive with paper-based delivery. The current users of specific library services may turn to other sources more convenient and accessible. "Killer" technologies (if not this one, then maybe the next) can affect libraries too, not just the communications industry (where a killer technology such as the transistor virtually wiped out vacuum tube demand, and "wireless" modems could well wipe out the need for extensive local traditional networking). The general trend toward localization can now be carried to an extreme. Where it once made economic sense to share resources, the price is dropping to the point that owning vs. sharing could become an option again, but now at

the individual user level. That's true for bibliographic databases, for the systems supporting them, and for the underlying information resources they describe (which have traditionally been housed in libraries).

I suspect similar concerns must have occurred when the price of the printed book made ownership possible beyond the access-restricted library. How we address the challenge of linkages to our users is more crucial, I believe, than linkages to each other—though both types of linkages must be addressed.

Approaches and Opportunities: Discussion and Wrap-Up

Thomas J. Galvin
Professor, School of Information Science and Policy, University of Albany

This part of the program was originally intended to begin with a "summary" and proceed to a "discussion," but Mary Levering, who is wonderfully sensitive to the needs of an audience, and I decided that we ought to reverse the order since you have been talked to so much. Accordingly, we would like to give you a chance, before I summarize, to talk first.

What do you think about all that you have heard today? What made you mad? What made you glad? What puzzled you that you would like to have clarified? What puzzled you that you do not want to have clarified? What did you hear that you liked, what did you hear that you did not like? Did you hear anything you did not agree with?

Discussion

Questioner: I think it is important now to raise questions regarding the need to provide public access to government information.

Galvin: I am sure many of you saw the piece, referred to by Ed Levine earlier, by David Osborne. In the *New York Times Sunday Magazine* of March 1 he said, "It is hard, but we are reinventing government." Osborne did quite a good job of capturing popular feelings about government. He said people do not want more government, but they do not want less government either. They want government that is more efficient. Then he slid off the point and talked about how government should be putting emphasis on generating revenue rather than providing service.

I think one of the really important things that we heard today from several different speakers was, where information is concerned, it ought to be the reverse. We should stop viewing government information primarily as a commodity and look at it more as a service.

Questioner: I am drawn to comment on the issue of who pays. It appears that there is a growing trend to attach an immediate cost to the access to information.

When you consider the proliferation of information and the growing trend to make it ever more available, I am given to think in such terms as: We do not pay for the highway and we drive on the highway; we do not pay for the water when we turn the faucet on, we pay for it on a monthly basis whether we use it or not; and we do not pay for access to the radio, unless we purchase the radio.

We do, however, pay for the television commodities that we subscribe to, even if we do not use them. My concern is that if information is only accessible if we pay for it each time we request it, we will be thwarted from requesting it.

Galvin: In general that is correct.

Questioner: On the other hand, if we pay for information as a subscription service like we do our telephone and water, etc., certain populations would overuse it, and others would under use it.

I am concerned with the question of what we are going to do if information becomes a commodity that we access like other home conveniences. Considering the likely possibility that fiber optics will be available in the home, we will have the possibility of instant access to information.

Galvin: That is a very perceptive observation, and it is a very tough topic. I think you have the theme for next year's Forum: Who pays? How much do they pay? And who decides?

Questioner: There is another way we can use the word "access," and that is with regard to being able to use information effectively that is made available, to access information through a means that is effective, which raises the issue of control and scheduling that affects everyone. Providing access also necessitates using vocabulary that everyone recognizes.

Galvin: Ed Levine said something that captured my fancy about the technology. He said, "Technology will become transparent, but information may become opaque." I think that is a very important point.

Summary

Did you notice how many people who spoke today to you from lists? Chuck McClure must have had four things on his list for the technology research, but lots of people had three things. And did you notice that they were often euphonic, much like "accountability, technology, and productivity?"

I decided there is some magic in the rule of three, so for this summary for each of the three Forum topics—money, management, and technology—I am going to try to highlight three points.

First, I would like to make mine an alliterative list by changing "technology" to "machinery." The topics now read "money, management, machinery."

As a librarian, of course, my natural tendency with everything is to classify it. I was impressed by how well balanced the conference was on those three things, money, management, machinery: five presentations primarily about money, five presentations primarily about management, and six presentations primarily about machinery.

If that adds up to more speakers than we had, it is because I counted Congressman Rose three times, since he managed to talk on all three and made a balanced presentation. I guess that is why he is a congressman.

I think there is a fourth M, and that is marketing.

Interestingly enough, only six people talked about machinery and only five about money or management, I counted 10 who talked about marketing—marketing information, products, and services.

I would like to talk about money first. Joe Clark's point merits being repeated: The question is not whether information is free; the question is, who pays? This is a very important point.

Second, both Gerald Yung and Gary Bass made the point that it really is important from a financial point of view not to get enraptured with the notion that government information is a way to generate revenue to support the operations of government. That can be very seductive in these difficult times.

And a third point about money—it is a question, really, and it is mine. As I listened today, I thought about an article that Thelma Friedes wrote several years ago about federal government information for a journal called *College and Research Libraries*. I do not have the citation because I did not bring my new Sony Datadisk library with me, but I urge you to look it up. It is probably five or six years old, and if you do not find it easily, give me a call or send me an E-Mail message.

What Thelma Friedes does is to ask a question that I think we have failed to ask up to this point today, and that is: Is all federal government information the same? Is it all the same as far as pricing is concerned? Because we tend to lump it all in together when we talk about marginal pricing, incremental pricing.

Government rarely distinguishes between publications that are obligatory, required by statute (the census publications would be the best example of that) and those publications that are related to the mission of the agency but are not mandated by statute, that are optional.

A good example of an optional publication would be that wonderful book that the IRS will send you free for the asking called "Your Federal Income Tax." Nothing in the law says the Internal Revenue Service will publish annually "Your Federal Income Tax."

Should we not think about differential pricing where these two different kinds of publications are involved? It seems to me that whatever we do, clearly we cannot just leave that question unexamined.

Now, management. Gary Bass gave very important advice—and I was trying to say it was part of the problem—on the importance of developing a broad-based access constituency. We need to enlarge the access lobby. That is point one.

Point two, which Gerald Yung raised. For a long time in the information area the states took their direction from the federal government. The states watched to see what Washington did, and then to tried to do likewise. That practice seems to have stopped several years ago, when the states collectively decided that it was sort of futile to continue to look to Washington, that they had to figure out how to do it at the state level.

We have been figuring out how to do some interesting things with information resource management in state government precisely because state government information, unlike federal government information, can be copyrighted or given a copyright-like status.

I think the interesting question that several people, and Gerald Yung particularly, raised is whether state government information resource management now will become the model for the federal government? Have we got a reversal of roles between state and federal government? A question to ponder.

As a last piece of advice with respect to managing technology, in the famous words of the Chicago politician, "Don't back no losers, don't make no waves." Don't pick no losers among the technology. Try to

avoid choosing technologies that have a short life.

John Kavaliunas asked, for example, how long the CD-ROM is going to be around? A very important question. David Penniman was talking about the Sony Data Disc, and I thought back to when I first came into librarianship in 1954. The hot technology in 1954 was the microcard, the invention of Fremont Ryder, the director of the Yale University Library. His dream was that you could carry the contents of the Yale University Library around in a shoebox.

As I listened to David talking about the Sony Data Disc, I wondered whether Fremont Ryder's dream is finally going to be realized? (Incidentally, the Buffalo and Erie County Public Library has a collection of some 5,000 corporate annual reports that exist only on microcard, and nobody makes or repairs microcard readers any more. If you know anybody who does, please call the Buffalo library.)

The point about transient technology is terribly important and difficult from a management point of view.

The third topic is machinery/technology. Mr. Kapor did a brilliant job of the best kind of environmental scanning, as he always does. I think environmental scanning is more than just sticking your head out to see what is going on out there; it also means talking about what is going on out there means. I thought that was a superb presentation.

The second point that I picked up on technology, also from Kapor, is: "Why is software so hard?" Did you not identify with him when he talked about wanting to pick up the box and throw it out the window?

Bob Kahn talked about how to cope with the diversity of outputs from the technologies. That has something to do with the new role I was trying to sketch out quickly for librarians of becoming intellectual intermediaries.

To repeat Ed Levine's wonderful point, "The technology will become transparent, but information may become opaque."

Now, about the fourth M, marketing. I checked off 10 things that you learn in a first-year marketing course in an MBA program. Congressman Rose was talking about a single access point, one-stop shopping. Mitch Kapor talked about building your own software versus buying components off the shelf, about interchangeability.

The Census Bureau is diversifying its product line, If that is not marketing, I do not know what is. Gary Bass talked about raising government information consumer awareness through marketing. I talked about market segmentation. Bob Kahn talked about converting a need, the need for the e-mail addresses of people on the Internet, into a product, a white pages for the engineer. It can not come too soon for me. He encouraged the audience not to overlook potential international markets for government information, Hensley also talked about market dynamics.

So I think of all the four M's, marketing comes out on top for today.

Actually, once you get into this alliteration thing, the possibilities are endless. I can now go up to five M's— money, management, machinery, marketing, and malarkey, which is probably what I am getting perilously close to. So, I think I had better stop at this point.

LIBRARY OF CONGRESS